MEDICAL SOCIETY OF THE STATE OF NEW-YORK

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TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NEW YORK,

FOR THE YEAR 1892.

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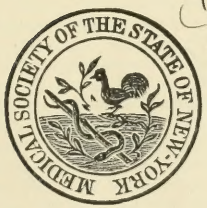

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ERRATA.

On page 64, line 16, for "prescribe," read "prescribed."

On page 80, line 8, for "few," read "view."

MEDICAL SOCIETY

OF

THE STATE OF NEW YORK.

ORGANIZATION.

By an Act of the Legislature passed April 4, 1806, and subsequently amended, the Medical Society of the State of New York is organized as follows:

The Society is composed of delegates, permanent members, and honorary members.

I. Delegates are sent by county medical societies, certain medical colleges, incorporated voluntary medical societies, and by the New York Academy of Medicine. Each county medical society is entitled to as many delegates as there are Assembly districts in said county; they are to be elected by ballot at annual meetings of the societies. Each incorporated medical college, which, by its charter, may be represented in this Society, is entitled to one delegate; incorporated voluntary medical societies, the members of which are members of their county medical societies, and whose by-laws conform with those of this Society, are each entitled to one delegate, and the New York Academy of Medicine to five delegates. The term for which delegates are elected is three years, and, as nearly as possible, one-third of the whole number is annually elected. The credentials of all delegates must be duly authenticated by the seal of the organization which they represent, and the signature of its Secretary. The organizations entitled to representation in this Society are required by its by-laws to pay to the Treasurer, for the use of the Society, five dollars annually, for each delegate they are entitled to send; and no delegate is permitted to inscribe his name in the register, at the annual meeting, until the dues against the organization he represents have been paid.

The following table exhibits the classification of counties and colleges, as respects the election of delegates, and shows the number of delegates to which each is entitled, and when the present delegations become vacant:

Vacant Feb. 1, 1893.	
Livingston,	1
Monroe,	3
Montgomery,	1
New York,	24
Onondaga,	3
Orange,	2
Oswego,	2
Rensselaer,	3
Schuyler,	1
Seneca,	1
Wyoming,	1
Yates,	1
College of Physicians and Surgeons, New York,	1
Long Island College Hospital,	1
Niagara University, Medical Department.	1
N. Y. Post-Graduate Medical School and Hospital.	1
Rochester Pathological Society.	1
Utica Medical Library Association,	1
Total,	49

Vacant Feb. 1. 1894.	
Albany,	4
Cattaraugus,	2
Cayuga,	2
Chautauqua,	2
Chemung,	1
Dutchess,	2
Essex,	1
Fulton,	1
Greene,	1
Jefferson,	2
Lewis,	1
Niagara,	2
Oneida,	3
Ontario,	1
Orleans,	1
Otsego,	2
Putnam,	1
Queens,	2
Richmond,	1
Rockland,	1
Saratoga,	2
Schenectady,	1
Schoharie,	1
Steuben,	2
Sullivan,	1
Tioga,	1
Tompkins,	1
Warren,	1
Albany Medical Col.	1
Medical Depart. of Univ. of Buffalo,	1
College of Medicine, Syracuse Univ.,	1
New York Polyclinic,	1
Elmira Academy of Medicine,	1
Total,	48

Vacant Feb. 1, 1895.	
Allegany,	1
Broome,	1
Chenango,	1
Clinton,	1
Columbia,	1
Cortland.	1
Delaware,	1
Erie,	5
Franklin,	1
Genesee,	1
Herkimer,	1
Kings,	12
Madison,	1
St. Lawrence,	3
Suffolk,	1
Ulster,	3
Washington,	2
Wayne,	2
Westchester,	3
University of City of N. Y., Medical Department,	1
N. Y. Academy of Medicine,	5
Bellevue Hospital Medical College,	1
Medical Association of Northern New York,	1
Total,	50

II. Permanent Members are elected at the annual meetings of this Society, the names of those eligible being presented by the Secretary upon application. Eligibility to permanent membership is secured by service as a delegate, and attendance and registry as such upon at least two annual meetings of this Society. Permanent members-elect must be active members of their county societies. Each permanent member on his election is required to pay an initiation fee of five dollars, and also the annual dues of a permanent member for the year in which he was elected; failure to pay the initiation fee within one year after election renders the election void. Permanent members are required to pay, annually, five dollars to the Treasurer, for the use of the Society, and no permanent member is allowed to inscribe his name in the register, at the meetings of the Society, who has not paid his dues for that year, and all arrearages. All annual dues are payable at the beginning of the session of the annual meeting of the Society. Only delegates and permanent members whose names are inscribed in the register are entitled to vote at the meetings of the Society.

III. The Society may, at the annual meeting, elect eminent physicians from other States, or from foreign countries, as Honorary Members. They

must have been nominated at a previous annual meeting, and those elected shall not exceed six in number in any year.

The Society may invite physicians who are present at any meeting to take seats as guests, but no physician of this State shall be so invited, who is not a member of a county medical society entitled to representation in this Society.

Honorary members and Invited Guests shall have the privilege of a seat at the meetings, and of presenting papers, and of taking part in discussions, but they shall not vote on any question nor be eligible to any office. Papers presented by them require a special vote by the Society, of reference to the Committee of Publication, in order to appear in the published *Transactions*.

THE ANNUAL MEETINGS of the Society shall be held in the city of Albany, on the first Tuesday in February in each year, and other meetings at such time and place as may be determined by a majority of the Society convened at any legal meeting. Fifteen members shall constitute a quorum for the transaction of business. The Society may, at its pleasure, change the time of holding its annual meeting, in accordance with the provisions of Chapter V., Laws of 1876, being an "Act to enable the Medical Society of the State of New York to alter the time of holding its annual meeting."

The Senatorial Districts established in 1836 are given in the following table. In connection with the name of each county is placed a figure, to indicate the number of Assembly Districts it contains, according to the apportionment made by the Legislature of 1879. Each senatorial district, through the members present from it at an annual meeting, elects a member of the Committee of Nomination.

First Senatorial District.—Kings, 12; New York, 24; Richmond, 1.

Second Senatorial District.—Dutchess, 2; Queens, 2; Sullivan, 1; Orange, 2; Rockland, 1; Ulster, 3; Putnam, 1; Suffolk, 1; Westchester, 3.

Third Senatorial District.—Albany, 4; Greene, 1; Schenectady, 1; Columbia, 1; Rensselaer, 3; Schoharie, 1; Delaware, 1.

Fourth Senatorial District.—Clinton, 1; Herkimer, 1; Saratoga, 2; Essex, 1; Montgomery, 1; Warren, 1; Franklin, 1; St. Lawrence, 3; Washington, 2; Fulton and Hamilton, 1.

Fifth Senatorial District.—Jefferson, 2; Madison, 1; Oswego, 2; Lewis, 1; Oneida, 3; Otsego, 2.

Sixth Senatorial District.—Allegany, 1; Chenango, 1; Steuben, 2; Broome, 1; Livingston, 1; Tioga, 1; Cattaraugus, 2; Schuyler, 1; Tompkins, 1; Chemung, 1.

Seventh Senatorial District.—Cayuga, 2; Ontario, 1; Wayne, 2; Cortland, 1; Seneca, 1; Yates, 1; Onondaga, 3.

Eighth Senatorial District.—Chautauqua, 2; Monroe, 3; Orleans, 1; Erie, 5; Niagara, 2; Wyoming, 1; Genesee, 1.

OFFICERS AND COMMITTEES.

ELECTED FEBRUARY 4, 1892.

PRESIDENT.

LEWIS S. PILCHER, Brooklyn.

VICE-PRESIDENT.

HENRY L. ELSNER, Syracuse.

SECRETARY.

FREDERIC C. CURTIS, Albany.

TREASURER.

CHARLES H. PORTER, Albany.

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HERMAN BENDELL, Albany. SENECA D. POWELL, New York.
W. J. NELLIS, Albany.

COMMITTEE ON BY-LAWS.

H. D. WEY, Elmira. A. R. SIMMONS, Utica.
F. C. CURTIS, Albany.

COMMITTEE ON HYGIENE.

LAURENCE JOHNSON, New York. E. F. BRUSH, Mt. Vernon.
A. N. BELL, Brooklyn. LEWIS BALCH, Albany.
D. S. BURR, Binghamton. W. J. HERRIMAN, Rochester.
O. W. PECK, Oneonta.

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MAURICE J. LEWI, Albany.

COMMITTEE ON MEDICAL ETHICS.

ABRAHAM JACOBI, New York. A. ROSS MATHESON, Brooklyn.
JAMES G. GLASS, Utica.

COMMITTEE ON PRIZE ESSAYS.

GEORGE H. FOX, New York. W. W. POTTER, Buffalo.
JOHN O. ROE, Rochester.

COMMITTEE OF PUBLICATION.

F. C. CURTIS, Albany. F. D. BAILEY, Brooklyn.
CHARLES H. PORTER, Albany. W. W. POTTER, Buffalo.

MEMBERS IN ATTENDANCE AT THE ANNUAL MEETING OF 1892.

DELEGATES.

Albany County:
O. D. Ball, Albany.
Henry Hun, Albany.
W. J. Nellis, Albany.
T. Kirkland Perry, Albany.
Medical Dep't Union University:
Franklin Townsend, Jr.
Broome County:
Daniel S. Burr, Binghamton.
Cayuga County:
William S. Cheesman, Auburn.
J. M. Jenkins, Auburn.
Chemung County:
H. D. Wey, Elmira.
Elmira Academy of Medicine:
C. W. M. Brown, Elmira.
Chenango County:
George O. Williams, Greene.
Clinton County:
Frank Madden, Plattsburgh.
Columbia County:
G. P. K. Pomeroy, Stuyvesant.
Delaware County:
H. A. Gates, Delhi.
Dutchess County:
J. W. Poucher, Poughkeepsie.
Erie County:
Edward Clark, Buffalo.
Benjamin H. Grove, Buffalo.
Herman E. Hayd, Buffalo.
Ernest Wende, Buffalo.
Niagara University:
Herman Mynter, Buffalo.
Essex County:
Charles B. Warner, Port Henry.
Franklin County:
C. E. Pearl, North Bangor.
Fulton County:
John Edwards, Gloversville.
Herkimer County:
George Graves, Herkimer.
Kings County:
Homer L. Bartlett, Flatbush.
William Browning, Brooklyn.
G. R. Butler, Brooklyn.
H. B. Delatour, Brooklyn.
J. W. Hyde, Brooklyn.
J. L. Kortwright, Brooklyn.
J. A. McCorkle, Brooklyn.
J. C. MacEvitt, Brooklyn.
George McNaughton, Brooklyn.
Ernest Palmer, Brooklyn.
A. J. C. Skene, Brooklyn.
Long Island College Hospital:
J. H. Raymond, Brooklyn.
Lewis County:
W. W. Jamieson, New Bremen.
Monroe County:
Wallace J. Herriman, Rochester.
E. W. Mulligan, Rochester.
H. T. Williams, Rochester.
Rochester Pathological Society:
Frank F. Dow, Rochester.
Montgomery County:
Peter L. Suits, Tribes Hill.
New York County:
Peter A. Callan, New York.
D. H. Goodwillie, New York.
George T. Jackson, New York.
Samuel Lloyd, New York.

Willy Meyer, New York.
Robert T. Morris, New York.
Albert S. Newcomb, New York.
W. P. Northrup, New York.
R. C. M. Page, New York.
Seneca D. Powell, New York.
Charles A. Powers, New York.
Robert B. Talbot, New York.
Francis Valk, New York.
Ralph Waldo, New York.

New York Academy of Medicine:
Simon Baruch, New York.

Niagara County:
F. J. Baker, Lockport.
C. M. Palmer, Lockport.

Oneida County:
Wilbur H. Booth, Utica.
W. M. Gibson, Utica.

Utica Medical Library Association:
Earl D. Fuller, Utica.

Onondaga County:
U. H. Brown, Syracuse.
Henry L. Elsner, Syracuse.
Nathan Jacobson, Syracuse.

Orange County:
W. E. Douglas, Middletown.

Rensselaer County:
C. B. Herrick, Troy.
William Wotkyns Seymour, Troy.

St. Lawrence County:
W. S. Daly, Ogdensburgh.

Schenectady County:
M. G. Planck, Schenectady.

Seneca County:
A. J. Nellis, Jr., Willard.

Ulster County:
C. V. Hasbrouck, Rosendale.
Albert H. Palmer, Marlborough.

Washington County:
G. H. Whitcomb, Greenwich.

Westchester County:
Edwin I. Harrington, Yonkers.
Charles Mason, Peekskill.
Henry Moffatt, Yonkers.

Yates County:
John M. Maloney, Dundee.

Med. Assoc. of Northern New York:
R. J. Wilding, Malone.

Permanent Members.

C. S. Allen, Greenbush
M. T. Babcock, Hammondsport
William H. Bailey, Albany
Lewis Balch, Albany
L. Bolton Bangs, New York
Bernard Bartow, Buffalo
Eugene Beach, Gloversville
Herman Bendell, Albany
Albert C. Benedict, Yonkers
J. M. Bigelow, Albany
E. F. Brush, Mount Vernon
L. Duncan Bulkley, New York
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M. H. Burton, Troy
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Alexander H. Crosby, Lowville
Lemuel Cross, Cobleskill
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F. C. Curtis, Albany
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H. L. Elsner, Syracuse
William S. Ely, Rochester
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M. Felter, Troy
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Amos Fowler, Albany
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J. H. Glass, Utica
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Tobias J. Green, Mexico
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Amanda S. Hickey, Auburn
E. H. Howard, Rochester
William R. Howard, Rochester
Lucien Howe, Buffalo
John T. Howell, Newburgh
A. Jacobi, New York
Nathan Jacobson, Syracuse
Charles Jewett, Brooklyn
Herbert G. Jones, Utica
O. F. Kinloch, Troy
D. M. Lee, Oxford
Joseph Lewi, Albany
Maurice J. Lewi, Albany
Daniel Lewis, New York
Samuel Lloyd, New York
A. J. Long, Whitehall
Alfred L. Loomis, New York
E. H. Loughran, Kingston
Frank S. Low, Pulaski
William Maddren, Brooklyn
Willy Meyer, New York
C. S. Merrill, Albany
D. V. O'Leary, Albany
R. C. M. Page, New York
F. M. Perine, Dansville
A. M. Phelps, New York
L. S. Pilcher, Brooklyn
Oren D. Pomeroy, New York
C. H. Porter, Albany
William Warren Potter, Buffalo
Seneca D. Powell, New York
Clarence C. Rice, New York
John O. Roe, Rochester
D. B. St. John Roosa, New York
Z. Rousseau, Troy
George Seymour, Utica
B. F. Sherman, Ogdensburgh
S. Sherwell, Brooklyn
A. R. Simmons, Utica
James D. Spencer, Watertown
B. U. Steenberg, Albany
C. L. Stiles, Owego
E. V. Stoddard, Rochester
Charles Stover, Amsterdam
F. R. Sturgis, New York
A. Walter Suiter, Herkimer
Peter L. Suits, Tribes Hill
Robert Thomson, Troy
D. M. Totman, Syracuse
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Francis Valk, New York
A. Vander Veer, Albany
E. Van Slyke, Albany
J. S. Van Vechten, Chateaugay
Theodore C. Wallace, Cambridge
Samuel B. Ward, Albany
William C. Wey, Elmira
Frank E. West, Brooklyn
R. J. Wilding, Malone
Charles E. Willard, Catskill
C. E. Witbeck, Cohoes
L. D. Witherill, Union
W. Gill Wylie, New York

INVITED GUESTS.

G. J. Barker, Fort Edward
A. L. Beahan, Canandaigua
G. Alder Blumer, Utica
J. H. Brownlow, Ogdensburgh
Joseph D. Bryant, New York
A. B. Burger, Ballston Spa
Arthur T. Cabot, Boston, Mass.
D. C. Case, Slingerlands
Edward W. Carhart, Milton
M. Helen Cullinge, Gloversville
Ernest W. Cushing, Boston, Mass.
C. W. DeBaun, Fonda
A. P. Dudley, New York
G. M. Edebohls, New York
John E. Eldred, Elmira
G. P. English, Boonville

M. D. Garlock, Little Falls
O. E. Herrick, Grand Rapids, Mich.
Joseph Hoffman, Philadelphia, Pa.
J. B. Hulett, Middletown
Reuben Jeffery, Brooklyn
Edward L. Keyes, New York
J. H. Linsley, Burlington, Vt.
Charles E. Lockwood, New York
A. J. Long, Whitehall
J. Lee McComas, Oakland, Md.
W. G. Macdonald, Albany
William A. Moore, Binghamton.
Paul F. Mundé, New York
Dwight H. Murray, Syracuse
Bronislaw Onuf, Dolgeville
John H. Packard, Philadelphia, Pa.
Charles S. Payne, Liberty
William M. Polk, New York
Joseph Price, Philadelphia, Pa.
Mordecai Price, Philadelphia, Pa.
Charles C. Ransom, New York
S. S. Richards, Frankfort
J. L. Roseboom, Rochester
T. L. St. John, Brunswick
M. Lee Smith, Watertown
Augusta A. Steadman, Amsterdam
Lewis A. Stimson, New York
I. S. Stone, Washington, D. C.
Walter F. Suiter, La Crosse, Wis.
John Thompson, Albany
C. F. Timmerman, Amsterdam
T. F. C. Van Allen, Albany
T. B. Van Alstyne, Richmondville
Charles G. Ward, Utica
O. J. Wilsey, Amityville
Claude Wilson, Waterville
J. Floyd Woodworth, Kinderhook
F. W. Zimmer, Rochester

MINUTES OF THE PROCEEDINGS

OF THE

MEDICAL SOCIETY OF THE STATE OF NEW YORK,

AT ITS EIGHTY-SIXTH ANNUAL SESSION,

HELD AT

ALBANY, FEBRUARY, 1892.

First Day.—*Morning Session.*

The President, Dr. A. Walter Suiter, of Herkimer, called the meeting to order Tuesday, February 2, 1892, at 9.30 A.M., in the Common Council Chamber, City Hall, and the exercises were opened with prayer by the Rev. A. V. V. Raymond, D.D., of Albany.

The President then delivered his

Inaugural Address.

Mr. Vice-President, Permanent Members, and Delegates: By the exercise of that prerogative which, by your very generous consideration, has been temporarily reposed in me, it now becomes my duty, as well as my great pleasure, to bid you welcome to this, the eighty-sixth annual meeting of the Medical Society of the State of New York. I would be insensible, quite, to the commonest feelings of gratitude of which the human mind is capable, did I not, with eagerness, avail myself of this opportunity to convey to you, in the most becoming language at my command, some estimate of my high appreciation of the very distinguished honor which, by your suffrages, you have been pleased to confer upon me. Double force attaches to the meaning of my words, when considered in connection with the fact that I have always represented upon this floor a constituent society which, although active, vigorous, and enthusiastic, is yet small and unpretentious when compared with many of the numerous and influential organizations within the jurisdiction of this Chair. In express-

ing, as I do, my sincere and cordial thanks for my elevation to this exalted position, I desire at the same time to manifest a hope that I may have so deported myself, and so conducted the administration of the Society's affairs, that I may have the satisfaction to meet and to merit, at the termination of my incumbency, the approbation to which a good and faithful servant is always justly entitled.

My first duty, under the By-laws, is to direct your attention to the present condition of the profession of the State. At this time that duty is a very pleasing one; for we are convened under circumstances most propitious for the welfare and progress of the interests to which we are devoted. At no time in the history of this organization has its material, moral, and scientific condition been more prosperous and promising. It is by no means optimistic to say, that all signs seem to indicate that we are entering upon a new era of progress and reform, and that, as a Society, we are more firmly secured in our status, as the universally recognized moral and legal exponent of the medical profession of the great Empire State of New York. I am happy to be able to state that there is good reason to believe that the time is not far distant when the dissensions in regard to ethical questions, which have served to sever profitable associations and old-time friendships in the profession, will be relegated to the oblivion to which they most properly belong. Codes of ethics are fast growing to be considered so objectionable, in a practical sense, that the time must soon come when prescribed rules for the personal conduct of men, reputably far above the average in education, intellect, and gentlemanly instincts, will be a thing of the past, unworthy of a place in these days of advanced and rapidly advancing civilization. The signs are propitious that the obscuring clouds are fast breaking away, and that the dawning of a better and brighter day is at hand; and it needs no prophet to foretell the benefits which will be, thereby, vouchsafed to the noble science to which we devote our lives and best efforts, and to our suffering fellowmen. Our membership is increasing as rapidly as the limits of the By-laws will permit; and, by your Treasurer's report, you will be informed of a considerable balance to the credit of the Society.

It seems necessary, however, to call attention again to some circumstances connected with the publication and sale of the *Transactions:* As is well known to many of you, there is a large accumulation of the *Transactions* for previous years at present in the hands of the Treasurer. It is an annual expense to the Society to keep possession of these volumes in the way of rent and insurance, and it is desirable to make such a disposition of them as will be most useful to the profession—as they increase more and more in value with the lapse of time; they are simply invaluable to the student of the progress of medicine in this

State. During the current year your Secretary issued a circular, which was sent to the Secretaries of the County Societies, in which the offer was made to send, gratuitously, as complete a file as possible to every society which had subscribed for its quota for the years 1890 and 1891. I would recommend that authority be given to send such a file to each of the societies subscribing for its quota of the *Transactions* for 1892. I would further recommend that the Secretary be authorized to offer a file of these copies to all the public medical libraries in the State. A commendable change was instituted by the Committee on Publication, in omitting the long list of deceased members from the *Transactions* of the present year. This list has, heretofore, been published from year to year at considerable expense to the Society. It was thought that the "In Memoriam" page would fully meet the purpose, especially in view of the fact that a recently enacted rule requires that biographical notices for publication in the *Transactions* shall be prepared. As there has been no formal action by the Society on this point, I would recommend that the Committee on Publication be instructed to omit, hereafter, the list of deceased members from the *Transactions*.

Since the gavel fell, one year ago, several important events have transpired, to which it is now my duty, and unfeigned pleasure, to invite your attention—all subjects for congratulation, indicative of progress, and fraught with exceeding interest to this great organization.

Medical Education. In this deliberative and parental medical body, officially intrusted, through its constituent organizations, with the high privilege and duty of protecting the interests and guarding the welfare of the profession of this great State, the subject of Medical Education can never be considered trite or commonplace, and must ever occupy a prominent position among the topics to which it is the duty of the presiding officer to direct the attention of this Society at its anniversary meetings. It can be truly said, that of all the high trusts committed to our charge, none has ever presented to us problems of deeper or more abiding interest. "What is well begun is half-done," and it is of paramount importance that we should guard well the portals of admission to the profession.

For the double purpose of interesting and informing those of you who have not especially considered the subject, and the placing on record by this Chair of existing facts, I desire to call to your attention, briefly, some points chiefly quoted from the admirable report on medical education and medical colleges, issued by the Illinois State Board of Health, and compiled by Dr. John H. Rauch, its distinguished Secretary. There is the greatest reason for congratulation in the con-

templation of the material and rapid advancement which has lately been made in the line of medical education, and in the elevation of the standard of requirements for license to practise in the United States; as it can be easily shown that far greater progress has been made, in these respects, during the eight or ten years last past than for any period of fifty years in the nation's history. Apropos of that fact, observe the following statements: "There are now 148 Medical Colleges in the United States and Canada—135 in the United States and 13 in Canada. In 1882, the number of colleges requiring certain educational qualifications for matriculation was 45; in 1886, 114; in 1889, 117; in 1890, 124; in 1891, 129. In 1882, the number of colleges that required attendance on three or more courses of lectures before graduation was 22; in 1886, 41; in 1889, 47; in 1890, 64; in 1891, 85. There has also been a gradual increase in the duration of the lecture terms from an average of 23.5 weeks in 1882 and 1883 to 26.3 weeks in 1890 and 1891. In 1882 and 1883, there were 8 colleges that had but 16 weeks. The number of colleges having terms of 6 months or more is now 111. In 1882 and 1883, the number was 42; it was 49 in 1884; 50 in 1885; 52 in 1886; 55 in 1887; 63 in 1888; 66 in 1889, and 76 in 1890."

It is extremely gratifying to me to be able to present to you these facts, and to note in addition that the American Medical College Association, the National Institute of Homeopathy, and the National Eclectic Association, have each adopted a requirement, to take effect at the beginning of the present year, of a four years' course of study with three annual courses of lectures of at least six months' duration. Quoting again from the report already mentioned: "There are thirty-four colleges that now," or will with the present year, "require four years' study and three courses of lectures; eleven that now or will soon require four years' study; four that will soon have four courses, and seventeen that will require three courses of lectures in the fall of 1891 or 1892, exclusive of those having that requirement now." It thus appears that the number of colleges in the United States that require but two courses of lectures, which up to 1868 was uniformly the custom, has been brought down to the comparatively low figure of twenty-one, and there is the best reason to believe that by the end of the present year more than one hundred of the colleges of the United States will have a requirement of four years' study and at least three courses of lectures. I am informed that during the past year two medical schools have changed their curriculum to a four years' graded course of study, viz., the Harvard Medical School of Boston and the Medical College of the University of Pennsylvania. It is also stated that the University Medical College of New York City is about to

abandon the didactic lecture system of medical teaching and inaugurate a scheme of teaching by recitations, which is a reform movement in medical education long since proposed and much to be commended. I am of the opinion that many of us will live to see this system universally adopted and practised by medical colleges, and that the didactic lecture course of instruction will be a thing of the past, not at all consistent with the marvellous advancement and improvement in all other educational methods. A dozen years or more have passed since the following remark was made in an editorial article of a prominent medical journal: "The idea of the American student ever being obliged to devote himself to five years of useful and practical study is beyond the dreams of the most hopeful optimism." Can it not be said, in view of the recent events, and the auspicious advances and prospects in medical education in this country, that the ideal implied by this remark may yet be reached?

The Medical Examining Boards and Licensing Bodies, which act independently of the schools of instruction in the United States, have reached the number of thirty-two, controlling, it is stated, "the recognition of diplomas in an area embracing about 41,000,000 people," and, without doubt, within a very few years, the divorcement of the licensing from the teaching of physicians will have been attained in every State and Territory in the Union, the anticipation of which fact has probably served as the most potent factor to bring about the present promising prospect for the elevation of the standard of medical education. Many of these Boards have been in operation for several years, and the recorded results of their examinations amply demonstrate the feasibility of the system and the wisdom of the innovation. For example, let me invite your attention to a summary of results, based upon the reports of six of the States of the Union, showing the percentages of rejections of applicants for licenses to practise: "Of 1183 graduates of colleges in the United States the percentage rejected was 24.09 per cent.; 19 graduates of Canadian colleges, 31.57 per cent.; 15 graduates of foreign colleges, 25 per cent.; 108 non-graduates, 62.03 per cent." It is pleasant to observe that the percentage of rejection among the graduates of the American colleges was somewhat lower than that of those of Canadian and foreign colleges.

The law establishing and regulating the Examining Board of this State went into effect on the first of September of the year just passed, and I refer to it with unbounded satisfaction. The subject was extensively considered by my distinguished predecessor in his inaugural address one year ago. He gave you a detailed statement comprehending the history of the reform up to the passage of the Act, and called

your attention to the duty of the Society under its provisions, viz., the nomination of suitable candidates to the number of fourteen or more, from which nominees the Board of Regents of the University were to select the seven members of the Board, who represent the Medical Society of the State of New York. From the nominations presented by the Society, the Regents of the University made the following appointments (the term of service of each member being determined subsequently as the law prescribes): For three years, from September 1, 1891—William Warren Potter, of Buffalo; William S. Ely, of Rochester; Maurice J. Lewi, of Albany. For two years—William C. Wey, of Elmira; George R. Fowler, of Brooklyn. For one year—Eugene Beach, of Gloversville; J. P. Creveling, of Auburn. The preliminary meeting of the Board was held in Albany, July 11, 1891, at which time an organization was effected, and two examinations of candidates for license have already been held under the Act. It is proper to state that the three Boards are acting in perfect harmony, the members of each being actuated by a desire to further in every way the intent and purpose of the law. It seems quite probable, that practical experience will, in due time, demonstrate the inutility of having three separate Boards, and present indications point to the probability that they will eventually be consolidated into a single Board.

Under the provisions of the Act, two of the members of the Board will retire on the first of September in the present year, and it will accordingly become necessary at this meeting for the Society to make two or more nominations to the Regents of the University for each vacancy. It will be recalled, that at the last annual meeting a special committee was appointed, with instructions to report nominees for the original membership in the Board. Your President has been informed that a large number of prominent members are of the opinion that, since the nominations are for the purpose of filling vacancies simply, the selection of them should be made by the nominating committee, and reported to the Society for ratification in the same manner that the officers of the Society are chosen under the By-laws. These propositions are submitted for your information only, and without especial recommendation from the Chair. It seems, however, that the disposition of this important matter should engage your thoughtful attention as early in the session as may be practicable, and I would so recommend.

As was to have been anticipated, several attempts were made in the last Legislature to nullify the operation of the law or render its provisions nugatory, but I am happy to be able to state that, thus far, its main purposes have not been materially interfered with. An amend-

ment, passed by the Legislature, became a law May 4, 1891, to the effect that the requirements of the Medical Examiners law shall not apply to students who matriculated before the 5th day of June, 1890. This amendment was opposed actively by your Committee on Legislation and many of the prominent members of the Society, in the belief that it was an effort to weaken the effects and purposes of the Act. An attempt was made to pass another bill, the effect of the operation of which would have been to completely supersede the existing law, and restore to the colleges the licensing power. I am pleased to state that the proposed measure was not reported by the committee to which it was referred. It may be expected, however, that similar attacks will hereafter be made by the opponents of the law, which consideration leads me to the belief that it is my official duty to advise, that the Committee on Legislation should be instructed to carefully watch the progress of events in that direction, in order to be constantly prepared to make a proper defence.

State Medical Library. A former President, somewhat more than a decade since (Dr. George J. Fisher, 1875), made the following reference, which is especially interesting at this time: "What we want, as nearly as I am at present able to understand our necessities, is a large public medical library, in every way freely accessible to the entire profession of the State." He then called attention to the opportunity afforded by the building of the new State Capitol; to the fact that the State Library would there "find a home," and recommended that an effort be made looking to the establishment of a medical department of the State Library, suggesting that the annual appropriations for the latter be "supplemented by the profession through the State and County Societies."

The subject received some thought and attention at the time and periodically since, but no definite effort was made until last year, when a bill was introduced into the Legislature, in accordance with a resolution passed by the Society. This bill passed both houses, and was approved by the Governor on May 21, 1891. The Act provides "for the acceptance and care, by the Regents of the University, of the Medical Library donated to the State by the Albany Medical College," consisting of 5000 volumes, and the sum of $5000 was appropriated for necessary expenses of shelving, cataloguing, and otherwise providing for the same. We thus have a nucleus started for the establishment of a public medical library, which will doubtless, by subsequent appropriations and contributions, continue to grow in extent and importance, until it will eventually become one of the most valuable institutions of the kind in the country. Under the provisions of the law it will be

open at all times, and accessible to every physician of the State. It is further provided that books may be loaned therefrom to all accredited physicians under proper regulations and restrictions, the only fee required being the necessary expense of transportation. This is a subject upon which both the profession and the public are to be congratulated, and I take great pride in placing the facts in your possession. It must be observed, however, that the end is not yet reached—in fact, but a beginning has as yet been made. There must be a constant watchfulness exercised by the Society, through its Committee on Legislation, to keep alive and foster the interest already awakened; and to invoke and, if possible, secure the aid of larger appropriations from year to year to meet the demand for the growth and usefulness of such a library, which is made necessary by the constant and voluminous increase of medical literature. To that end I would recommend and urge that the Committee on Legislation be instructed to propose to the Legislature now in session, and earnestly favor by all possible means, an increase of appropriations for the present year.

The Pan-American Medical Congress. My judgment leads me to state that by far the most important and far-reaching event during the year was the conception and inauguration of the Pan-American Congress of Physicians and Surgeons. It is by no means an exaggeration to say that no greater or more comprehensive scheme has ever been attempted in this or any other country in the history of medical organizations. To some extent, perhaps, the suggestion of such an organization originated from the ideas advanced along the lines proposed in the efforts which have been made, for some time past, in the direction of establishing reciprocal relations, in a commercial sense, by our Government with those of Latin America and the provinces upon our northern boundaries. However that may be, the cardinal purpose of the project is to bring into fraternal relationship all the organized medical bodies of this vast Western Continent, including the contiguous islands—a scheme never before conceived or attempted. Some idea of the magnitude and comprehensiveness of this great enterprise may be obtained by a simple reference to the fact that, after an extensive correspondence conducted by the projectors with a view to acquiring a consensus of opinion as to the feasibility of the proposition, nearly one thousand medical men, distinguished in their respective districts and countries, representative of nearly if not quite all the medical organizations of North and South America and the bordering islands, have accepted with great enthusiasm positions as members of the Committee on Organization and its Auxiliary Committee.

It is designed to hold the Congress once in four years (although it is now believed that the interval between the Congresses will eventually be changed to three years), and the city of Washington has been selected as the place for the first meeting in 1893. The Congress will be divided into twenty-two sections, each having a chairman, several vice-chairmen, and secretary, and two assistant Spanish-American, or at least Spanish-speaking, secretaries. These sections will represent all the principal and special departments of medical and surgical science, including naval and military hygiene and quarantine. The official languages will be English, French, Spanish, and Portuguese. The general officers of the Congress have already been chosen, and consist of a president, vice-presidents (one from each State and Territory of the United States, and one from each of the countries represented), a secretary-general, a treasurer, and a board of seven trustees. The Congress has been legally incorporated, and the Congress of the United States will be asked to patronize the project and grant an appropriation to assist in defraying the expenses of the entertainment of the foreign guests and its maintenance.

Early in the year your President was requested to nominate to the Secretary-General an Auxiliary Committee, with a representative from each of the constituent societies of the Medical Society of the State of New York. Accordingly, a list of fifty-six names was sent, and I have the pleasure to state that the nominations were all accepted and appointed as the Auxiliary Committee for the State of New York, the President of the Society being the *ex-officio* Chairman. The Committee on Organization, comprising one representative from each State and Territory of the United States, and one from each—the United States Army, the United States Navy, and United States Marine-Hospital Service, met in St. Louis, Mo., on the 14th of October last. Your President attended that meeting and served by proxy as the representative of the State of New York. At that meeting the plans were further advanced, and the general organization made complete.

It is especially gratifying to me to call to your notice the advanced position already taken by the Medical Society of the State of New York in this stupendous enterprise, and to state that a considerable number of its most prominent members hold important official positions therein. It only remains now for me to recommend, in view of the facts which I have in this necessarily somewhat detailed manner presented for your consideration, that some formal action be taken by the Society looking toward the encouragement of this great scheme and the ratification of the steps already taken by your President in a semi-official capacity.

Increase of Membership. Very much has been said from time to time on these occasions by my predecessors, and many recommendations made, in the matter of the adoption of means and measures for increasing the membership in the Society. I, also, have something to say touching that subject. I quite agree with the following sentiment, expressed by the distinguished occupant of this Chair in 1888: "The easier membership becomes the less it is prized. When anyone who chooses can become a member of a society the honor attached to membership ceases. Double or treble the membership and the abler and better men will lose their interest in its affairs and absent themselves from its sessions. Increase the quantity and you will lower the quality." These are expressions which may be regarded as axiomatic, and are so pertinent that I think you will pardon me for their repetition. I believe that if you should determine to "let down the bars," and thus lower the standard of admission, the results would be unsatisfactory in the extreme; the premium for excellence and disinterested service would be removed, and the natural trend would be to reduce our status to that of the voluntary associations, which are essentially non-representative in character. It is a well-established principle that that honor or privilege is most appreciated that calls for the highest standard of excellence, and is, therefore, most difficult to obtain.

The original design of the law which gives to this Society its corporate existence was to constitute a representative medical body *de jure* and *de facto*, and in it at the time of the passage of the Act were vested certain powers and privileges, by which all other organizations were made subsidiary. Of course, Acts subsequently passed have more or less modified our position in that respect, but we must of necessity maintain the standing and relation which we have always occupied so far as we are permitted so to do. Any other course could not but be one of retrogression, and tantamount to a surrender of the position which we have always maintained in the minds of the profession and laity as well.

I am led to refer to this topic somewhat at length, because there still seems to exist a growing sentiment in the direction mentioned, and I am deeply impressed with the idea that there are no exigencies in our present condition of prosperity (both in attendance and influence) which demand anything like the wholesale bid for membership which has recently been made by another great representative organization in this country. However, the proposition to make all presidents of county societies *ex officio* delegate members presents some commendable features, and I would renew that recommendation, with this provision: That instead of being made delegates with the right of succession to permanent membership, they be admitted to membership *causa honoris*,

and serve as such during their incumbency of the presidency of the Society to which they are accredited; and that they be meanwhile entitled to the same rights and privileges conferred upon permanent honorary members, elected in accordance with Section V., Chapter I., of the By-laws, which rights and privileges are described in Section III. of the Articles of Organization.

A suggestion has been made to me during the adjournment, which appears to have, at least when considered in the abstract, sufficient importance in this connection to justify its being brought to your notice. It is, that all honorably discharged surgeons, who served in the volunteer service of the War of the Rebellion in New York Regiments, and attained the rank of Major, be declared eligible to honorary membership; and that by making formal application, and exhibiting the proper credentials, they may be placed on the list of honorary members, if no objection be made. If this subject is deemed worthy of consideration by the Society, it appears that it would be well, first, to make inquiry as to the number which the passage of such a by-law would admit; and second, as to the feasibility of requiring that all such applicants be members of county societies in affiliation, and also to ascertain the facts regarding their geographical distribution. I submit this proposition without argument or recommendation.

Abuse of Medical Charity. It appears to me that the urgency of the situation demands that I shall make a brief reference to a topic which has many times been, to a greater or less extent, considered in this presence. I refer to that constantly increasing evil—the abuse of medical charities. I have to characterize it as one of the most vexatious and difficult questions of our time. When the fact is considered, that it is reported that in the fifty hospitals and thirty dispensaries of the city of New York, there were, during the year 1890, something like 550,000 patients treated gratuitously, which is nearly one-third of the entire population of that great metropolis; and a fair estimate shows that quite 20 per cent. of those receiving the benefits of the charities mentioned, falsely state their condition in life, and resort to various tricks and devices to effect their purpose to profit by them; and that, per consequence, a large class of deserving and worthy medical men, struggling for the necessaries of life, are indirectly suffering untold injuries thereby, I truly believe that no excuse need be offered from this Chair for constant agitation of the subject, until some material and legislative means shall be sought and obtained which will serve to correct the abuses, and confine this practice within the legitimate lines originally intended.

Two classes are particularly injured by this unfortunate condition,

viz., the struggling young practitioner, and the charitable patrons of the institutions themselves. In recent years many efforts have been made by the officers of these hospitals and dispensaries to remedy this evil by a combination of interests and the institution of private examinations to ascertain the true financial condition of the applicants, but the rivalries and jealousies among them, and the great competition to make the greatest showing of results, in order to keep up the charitable interest of the wealthy patrons who support them, have served to nullify all such efforts and defeat the accomplishment of the laudable purpose in view. It seems that nothing short of positive legislative enactment will avail to restore the proper status—such legislation, in fact, as will make it a misdemeanor with a proper penal consequence, in the same manner that "false pretence" in relation to property is made a penal offence by law. It is understood that a bill has been, or will be, introduced in the present Legislature which will comprehend the facts which I have presented, and I do not doubt that this Society will see its way clear to offer to it the great influence of its moral and material support, and to that end I would recommend that the Committee on Legislation be instructed to assist the progress of the measure. I would further recommend that some expression be formally made by the Society at large before its final adjournment in favor of the passage of such a law.

INDEX CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, AND THE MEDICAL AND SURGICAL HISTORY OF THE WAR. The Library of the Surgeon-General's Office in Washington is, with one or two exceptions, the greatest collection of medical literature in the world. An idea of the immensity of this collection may be conveyed by the statement, that there were upon its shelves at the end of the last fiscal year (June 30, 1891), 101,969 volumes and 155,321 pamphlets, besides copies of all the medical journals of the world. This magnificent storehouse of literature is the property of the people of the United States, and should be made in all respects available and useful to them.

A number of years since, Congress passed an Act authorizing the compilation and publication of a carefully indexed catalogue of all the titles of the works therein contained. The publication of this work is in progress, and the twelfth quarto volume has been issued. In these twelve volumes 137,578 titles are indexed, and it will require four or five volumes, I am informed, to complete the work. The Act which authorized its publication provided but for a limited number of copies, and prescribed the manner of their distribution. They have been supplied to certain libraries and individuals in such an imperfect manner

as to be practically inaccessible to the vast majority of the members of the profession. The original plates from which the work was published are still preserved, and I am informed by the distinguished author and compiler, that additional copies can be published for the small sum of $2.00 per volume. It is understood that a movement is about to be made to petition Congress for an appropriation to defray the expense of the issuance of a suitable number of additional copies, in order that this monumental work may be made as accessible as it is useful. I would earnestly recommend that in view of these facts, this Society pass a resolution memorializing Congress upon this subject, and requesting that the appropriation and the authorization be made. The same remarks and recommendations apply with equal force to the publication of the *Medical and Surgical History of the War of the Rebellion*, the distribution of the original copies of which has been even more unsatisfactory to the profession.

Uniform Date of Annual Meeting of County Societies. A very misleading and seemingly unnecessary discrepancy has been observed to exist for many years in the list of officers of county societies, as published from year to year in the *Transactions*. In many instances, the list of officers published are those elected for the year preceding the publication. This leads to much confusion and inconvenience, and is entirely due to the fact that there is no uniformity as to the date of holding the annual meetings by the county societies, many being held just after the Committee on Publication receives the lists from the several secretaries.

It is quite proper that attention should be given to this circumstance, and I therefore recommend that the by-laws of this Society be so amended that all constituent societies shall be required to hold their annual meetings on a corresponding date, at such time of the year as will enable the Committee on Publication to receive the lists of officers and members in proper time to correctly publish them in the *Transactions*. I would suggest that a date be fixed upon not later than the 15th of May. There is another reason worthy of mention for which such an amendment is desirable, viz., that communication with county societies could then be had regarding matters considered or passed upon by the State Society at its annual meeting, before the publication of the *Transactions*, a desideratum which is often of manifestly great importance.

Arrearages of County Societies. It is quite well known to you all, that several county societies in the State have either disbanded or had no representative relations with the State Society; not having

for some time past been represented here, they have become in arrears as to yearly dues. In several instances it has come to the knowledge of your presiding officer, that representation and active participation would be resumed by these societies, if they were not restrained by the necessity of liquidating their indebtedness, which, in a few instances, has grown to somewhat forbidding proportions. Under the By-laws no authority is given for the remission of such dues upon any consideration. It has seemed desirable, and to the interest of the Society, at times, that some latitude should be given the principal officials of the Society in this respect, and I accordingly recommend that the President, Secretary, and Treasurer be authorized, by an amendment to the By-laws if necessary, to exercise their judgment, jointly, in such circumstances as a *sub-Comitia Minora;* and empowered to adjust with county societies which are in arrears for more than two years. I would also recommend that the same authority be given these officers in the case of members who are in arrears.

Necrology. I greatly regret that I am compelled to state that the necrological record of the past year is painfully long, and I refer to it with a sense of profound and abiding sorrow. Since the adjournment one year ago, one honorary and sixteen permanent members, all distinguished for the noble and generous deeds which ever characterize the true physician's life, have been summoned to "that stirless rest, that change which never changes," "that awful gulf no mortal e'er repassed," and have gone to meet the reward which, we hope, is prepared for such as they. Mournfully I place on record here their names, ages, and the dates of their death, and proudly offer for emulation the example presented by their honorable, devoted, and useful lives:

Dr. Henry I. Bowditch, honorary member, Boston, Mass., died January 14, 1892, aged eighty-four years.

Dr. Daniel D. Bucklin, permanent member, Troy, N. Y., died April 9, 1890.

Dr. G. L. Halsey, permanent member, Unadilla, N. Y., died February 17, 1891, aged seventy-two years.

Dr. George P. Salmon, permanent member, Hudson, N. Y., died April 11, 1891, aged sixty years.

Dr. Paul H. Kretzschmar, permanent member, Brooklyn, N. Y., died April 27, 1891, aged forty-four years.

Dr. Peter V. S. Pruyn, permanent member, Kinderhook, N. Y., died May 2, 1891, aged fifty-one years.

Dr. Robert Frazier, permanent member (retired), Camden, N. Y., died May 10, 1891, aged seventy-four years.

Dr. George N. Burwell, permanent member, Buffalo, N. Y., died May 15, 1891, aged seventy-one years.

Dr. B. Fordyce Barker, permanent member, President 1859, New York City, died May 30, 1891, aged seventy-three years.

Dr. L. J. Ames, permanent member, Mount Morris, N. Y., died May, 1891, aged seventy-six years.

Dr. Frank Hamilton Potter, permanent member, Buffalo, N. Y., died July 16, 1891, aged thirty-one years.

Dr. John J. Flint, permanent member, Albany, N. Y., died July 19, 1891, aged seventy-two years.

Dr. Daniel Pardee, permanent member, Fulton, N. Y., died August 25, 1891, aged fifty-seven years.

Dr. Samuel Avery, permanent member, Phœnix, N. Y., died September 20, 1891, aged eighty years.

Dr. F. S. Greene, permanent member, Coxsackie, N. Y., died September 30, 1891, aged seventy-one years.

Dr. Nathaniel C. Husted, retired permanent member, Tarrytown, N. Y., died November 19, 1891, aged sixty-six years.

Dr. Christopher V. Barnett, retired permanent member, Coxsackie, N. Y., died November 19, 1891, aged seventy-three years.

Dr. Simeon Tucker Clark, permanent member, Lockport, N. Y., died December 24, 1891, aged fifty-five years.

I cannot refrain from expressing an especial tribute to the memory of two of the distinguished decedents whose names I have read. The history of the lives and eminent services of Fordyce Barker and Frank Hamilton Potter will be their most enduring monument—one whom death overtook as he had rounded out the full measure of years, a giant in intellect, a paragon of geniality and character; and the other just as he was entering upon a most promising career in his chosen special work. Let us pause to drop a sympathetic tear upon their new-made graves, as we strive to imitate their virtues and achievements. In due time during the meeting, and in accordance with the rule, memoirists will be appointed, who will prepare eulogies upon the lives and deeds of each of the deceased members, for publication in the *Transactions*.

Conclusion. The Business Committee has prepared for your delectation and profit a programme which, by reason of its extent and character, has made it seem necessary to continue the innovation inaugurated at the last annual meeting, and has appointed a session for Thursday afternoon. But it must be said, that even with this prolongation of the meeting, the number of papers to be presented is so great as to require that the time allotted by the Committee for the reading of each paper shall be strictly observed. It will be my constant endeavor to act with promptitude and impartiality, and I earnestly trust

that my effort in that direction will not be misinterpreted, and that it will meet from the members of the Society an obedient response.

I have to ask the pardon of the Society if I have seemed prolix and wearisome in making this somewhat extended address. I am quite certain, however, that the nature of the facts and circumstances presented for your consideration, justify the taking of the time consumed in their repetition; and I think that you will agree that I have not in any manner departed from the scope and character, nor exceeded the limits, prescribed by the By-laws. I am also obliged to crave your generous indulgence for my inexperience and lack of parliamentary skill, and I desire to express the assurance that every member, and every measure (properly proposed), will at all times receive the most distinguished consideration from the Chair.

My only remaining duty is, to make the formal declaration that the annual meeting is now in order, and prepared to proceed with the business to which it is committed.

Dr. Henry Flood moved that the address be referred to a committee to report upon its recommendations. The motion was carried, and the following committee subsequently appointed: Dr. Henry Flood, of Elmira; Dr. A. Jacobi, of New York; and Dr. John O. Roe, of Rochester.

Dr. D. B. St. John Roosa offered objection to the reference of the selection of nominees for vacancies in the State Board of Medical Examiners to the Committee of Nominations, and moved that a special committee be appointed for the purpose. This motion was discussed by Drs. Daniel Lewis, A. Jacobi, A. Vander Veer, and L. S. Pilcher, who moved as a substitute that the business be referred to the Committee of Nominations. This motion was lost, and Dr. Roosa's was carried. The following committee was subsequently appointed by the Chair as the Special Committee of Nominations for vacancies on the State Board of Medical Examiners: Drs. D. B. St. John Roosa, of New York; Daniel Lewis, of New York; Charles Stover, of Amsterdam; Charles Jewett, of Brooklyn; and Edward Clark, of Buffalo.

Dr. A. Vander Veer moved that the recommendation contained in the President's Address that the matter of back dues of certain county societies be referred to a sub-committee of the *Comitia Minora*, consisting of the President, Secretary, and Treasurer, with power, be at once adopted so that early action might be taken. Carried.

Dr. H. Bendell, of the Committee of Arrangements, presented the names of a number of invited guests, who were invited to take part in the meeting. (See list of Invited Guests on page 7.)

The President announced the following:

Business Committee: Dr. Seneca D. Powell, of New York; Dr. James D. Spencer, of Watertown; Dr. Franklin Townsend, Jr., of Albany.

Committee on Credentials: Dr. J. H. Glass, of Utica; Dr. Walter B. Chase, of Brooklyn; Dr. Edward Clark, of Buffalo.

The Secretary presented the names of forty-five applicants for permanent membership, which under the By-laws were referred to the Committee on Nominations.

Dr. S. Baruch, of New York, read a paper, "A Plea for the Methodical Treatment of Chronic Diseases."

Discussed by Drs. J. Leonard Corning, T. B. Nichols, Charles C. Ransom, George A. Evans, and L. D. Bulkley.

Dr. Eugene Beach, of Gloversville, read a paper, "A Case of Pneumo-hydrothorax."

Discussed by Drs. Henry Flood and Ralph Waldo.

Dr. Henry L. Elsner, of Syracuse, read a paper, "Perforation of Typhoid Ulcer with Adhesive and Protective Peritonitis."

Discussed by Drs. A. Jacobi and W. S. Cheesman.

Dr. F. E. Martindale, of Port Richmond, read a paper, "A Pathological Review of Diphtheria, with Special Reference to a New Method of Treatment, based upon Three Years' Practical Experience."

Discussed by Dr. A. Jacobi.

Dr. George Seymour, of Utica, read a paper, "Asepsis and Antisepsis in Obstetrical Practice."

Discussed by Drs. A. F. Currier and S. Baruch.

Dr. Herman E. Hayd, of Buffalo, presented the following communication from the Erie County Medical Society, being a resolution adopted at a recent meeting of that Society:

"*Resolved*, That our delegates to the Medical Society of the State of New York be instructed to request that Society, by its Committee on Legislation, to frame a bill for presentation to the Legislature, restricting the practice of hypnotism to legally qualified medical practitioners, and prohibiting exhibitions of hypnotism."

The communication was received, and referred to the Committe on Legislation.

Adjourned at 1 P. M.

Afternoon Session.

The Society was called to order at 2.30 P. M., by the President.

The Committee of Nominations was announced, as follows:

Appointed by the President.—Dr. Henry Flood, of Elmira.

First District.—Dr. William Maddren, of Brooklyn.
Second District.—Dr. E. F. Brush, of Mount Vernon.
Third District.—Dr. Maurice J. Lewi, of Albany.
Fourth District.—Dr. John Burdick, of Johnstown.
Fifth District.—Dr. Earl D. Fuller, of Utica.
Sixth District.—Dr. L. D. Witherill, of Union.
Seventh District.—Dr. Henry L. Elsner, of Syracuse.
Eighth District.—Dr. William R. Howard, of Rochester.

Dr. D. B. St. John Roosa presented the report of the Committee on Legislation as follows:

To the President and Members of the Medical Society of the State of New York:

Gentlemen: The all-absorbing interest which has been manifested by the members of the medical profession throughout the State relating to the subject of medical legislation has been remarkably stimulated by the efforts which, through the exertions of this Society, have been made in advancing the standard of medicine. For years our unsuccessful attempts at correcting existing evils in the relations which the physician bore to the public has engendered a sentiment that nothing but defeat would be the outcome of all honest attempts to formulate a plan by which the needs of the public as well as the profession might be subserved. The first step in the right direction is an accomplished fact, and the history of medicine has no brighter page than that which shows that hereafter any person desiring to practise medicine and surgery in the State of New York must show cause before a body appointed by the State to investigate the qualifications of the applicant. The beneficial influence of this policy of divorcing the licensing from the teaching power is made manifest in so many and varied ways, that to attempt to enumerate them would be a task of supererogation. One point, however, your Committee must dwell upon for a moment at least, and that is, the spirit of emulation which is rife in our sister States, because of the advance step which we have taken. From all parts of the Union, and from many foreign countries, requests are being constantly received for a copy of the law now in force, together with letters of congratulation on the great good which has resulted because of the enactment of this law.

Attempts are being made, however, at this very moment to undermine the foundation which has been laid, and we urge upon the members of the Society to use every effort toward nullifying the attempt of those who, for selfish purposes, are endeavoring from year to year to amend the law. We earnestly trust that this Society will give expression to its sentiments on this matter, in order that these same sentiments advanced year after year may be used before the legislative bodies of our State as an indication that we are unutterably and unequivocally opposed to any tampering with the law of 1890.

For two years your Committee has had in hand a bill which, through the suggestions contained in a paper read by Dr. A. Walter Suiter, was formulated for the purpose of preventing the embalming of bodies in deaths from questionable causes without the consent of the attending physician or the coroner. Unfortunately, the legislative complications of last year made it im-

possible for this bill to become a law, nor has it been introduced this year. But this Committee would again urge upon the Society the importance of having placed on our statute-books a law which will make it possible for a conviction to result where poisoning has been successfully attempted, a result which cannot now be attained and which has not been attained in the State of New York for many years, because the work of the embalmer has interfered with the scientific investigation of the chemist.

Persons prominent in the law and medical profession, members of medical jurisprudential societies stand ready and eager to aid us in our efforts in this direction, and it is the opinion of your Committee that our successors in office should be charged with this work on behalf of the Society.

At the last session of the Legislature, a bill establishing a State Medical Library was passed and signed by the Governor. Your Committee, acting under instructions, was represented at the hearing on the measure, and strenuously advocated its passage. The library purchased, it is hoped, will form the nucleus for a State Medical Library which will be a credit to the Empire State of the Union.

It is urged by your Committee on Legislation that they be empowered to appoint an auxiliary body to act in conjunction with them on matters affecting medical interests. The work connected with the distribution of the Committee's duties as they exist at present are stupendous. For three men to individually visit and consult with 128 members of the Assembly and 32 Senators is a task which is well-nigh impossible, and during the two years that we have held office it has frequently occurred to us that had we the power to appoint someone to represent us in each legislative district, much more could be accomplished in the way of enlightenment on all the subjects which have been under consideration. Circular letters to members of the Legislature are so common that it is not surprising that frequently they are thrown into the waste-basket without having even been read. Personal solicitation, however, to a legislator from a physician resident in his own district, carrying with it logical argument, is of more importance than all the printing-matter which can emanate from an editorial sanctum.

The duties of future Committees on Legislation representing this Society, will undoubtedly be more preventive than creative. It seems to us that their principal work will be to watch closely the bills which are introduced from day to day, with a view to checking any legislation calculated to impair the value of our present laws.

While it may be urged that we have not yet reached the goal for which we strove, the establishment of one Board of Medical Examiners recognizing no school in medicine, and representing no creed or pathy, still the control of medical licenses has been established, and if, in the course of time, it becomes apparent that one board could administer the functions of this office more wisely and better than under the existing state of affairs, the wisdom of such a course will manifest itself to our legislators.

Respectfully submitted,

D. B. St. John Roosa,
Daniel Lewis,
Maurice J. Lewi,
Secretary.

On motion, the report of the Committee was adopted.

Dr. Roosa also, on the part of the Committee, offered the following resolution:

Resolved, That a committee of twelve be appointed to coöperate with the Society's Committee on Legislation in opposing, Thursday next at 3.30 P. M. in the Senate Library, a bill exempting additional students from the provisions of the Medical Law of 1890.

Adopted, and the following committee appointed by the Chair: Dr. Herman Bendell, Dr. Henry Hun, Dr. C. L. Stiles, Dr. William H. Bailey, Dr. B. F. Sherman, Dr. James D. Spencer, Dr. Eugene Beach, Dr. William Maddren, Dr. A. Vander Veer, Dr. L. S. Pilcher, Dr. A. Jacobi, and Dr. R. J. Wilding.

Dr. J. Leonard Corning moved a vote of thanks to the Committee on Legislation for its services to the Society and to the profession. Carried.

Dr. C. E. Lockwood, of New York, read a paper, "A Case of Poliomyelitis Anterior Chronica."

Discussed by Drs. A. Jacobi, J. Leonard Corning, and E. D. Fisher.

Dr. Charles C. Ransom, of New York, read a paper, "Mineral Waters in the Treatment of Disease."

Dr. Ralph Waldo, of New York, read a paper, "Treatment of Endometritis."

Discussed by Drs. A. F. Currier, Walter B. Chase, Herman E. Hayd, George Seymour, and R. B. Talbot.

Dr. Andrew F. Currier, of New York, read a paper, "Amputation of the Vaginal Portion of the Cervix Uteri in Cases of Suspected Carcinoma."

Dr. George Henry Fox, of New York, read a paper, "Notes on Rare Cases of Skin Disease," with illustrations.

Discussed by Drs. L. D. Bulkley and A. Jacobi.

Dr. A. M. Phelps, of New York, read a paper, "Open Incision for Talipes Varo-equinus (reporting Statistics and presenting the First Cases operated on in 1879)."

Discussed by Drs. Willy Meyer and Herman Mynter.

Dr. W. D. Garlock, of Little Falls, read a paper, "Primary Cancer of the Liver, with Biliary and Renal Calculi."

Dr. J. Leonard Corning, of New York, read a paper, "Pain: Its Nature, Diagnostic Significance, and Treatment."

Dr. E. D. Fisher, of New York, read a paper, "The Mental Derangements observed in Multiple Neuritis, especially those of Alcoholic Origin."

Dr. John O. Roe, of Rochester, read a paper, "Nasal Catarrh in Children; Importance of Early Treatment."

Discussed by Drs. Clarence C. Rice, A. Jacobi, and Charles Stover.

Dr. D. H. Goodwillie, of New York, read a paper, "Fibroids of the Naso-pharynx, and their Treatment by Means of the Electro-cautery."

Discussed by Dr. C. C. Rice.

The Committee of Nominations reported favorably upon the following list of applicants for membership, which was presented by the Secretary and referred to it under the By-laws: Drs. Edward B. Angell, Rochester; James M. Barrett, Owego; Nelson W. Bates, Central Square; Wilbur H. Booth, Utica; Israel C. Bourne, Masonville; Peter A. Callan, New York; Frank B. Carpenter, New York; Charles E. Douglass, Lowville; Henry L. Elsner, Syracuse; Z. T. Emery, Brooklyn; Mahlon Felter, Troy; William C. Gallagher, Slaterville; D. H. Goodwillie, New York; John B. Harvie, Troy; Cornelius V. Hasbrouck, Rosendale; Clinton B. Herrick, Troy; Urban G. Hitchcock, New York; William R. Howard, Rochester; Joseph H. Hunt, Brooklyn; Nathan Jacobson, Syracuse; David D. Jennings, New York; Samuel Lloyd, New York; Eli H. Long, Buffalo; Charles P. McCabe, Greenville; John M. Maloney, Dundee; Willy Meyer, New York; Theodore D. Mills, Middletown; Herman Mynter, Buffalo; Robert T. Morris, New York; Albert S. Newcomb, New York; Thomas B. Nichols, Plattsburgh; Andrew Otterson, Brooklyn; R. C. M. Page, New York; Roswell Park, Buffalo; Albert E. Persons, Buffalo; Seneca D. Powell, New York; Wheelock Rider, Rochester; Abram S. Seeber, Milford; William Stevens, New York; Peter L. Suits, Tribes Hill; Francis Valk, New York; J. S. Van Vechten, Chateaugay; Ralph Waldo, New York; Robert J. Wilding, Malone; and George H. Witter, Wellsville.

On motion, the report of the Committee recommending their election was accepted, and they were elected to membership on compliance with the By-laws.

Meeting adjourned.

Evening Session.

The Society met again at 7.45 P. M., the Vice-President, Dr. W. W. Crandall, in the Chair.

Dr. Charles A. Powers, of New York, read a paper, "Early High Amputation in Senile Gangrene."

Discussed by Drs. H. Mynter and Willy Meyer.

A paper by Dr. Graily Hewitt, of London, Eng., "Note on Lacerations of the Cervix Uteri," was read by Dr. Walter B. Chase.

Discussed by Drs. Chase, Herman E. Hayd, B. F. Sherman, and G. M. Edebohls.

Dr. Willy Meyer, of New York, read a paper, "Nephrotomy for the Treatment of Sudden Anuria occurring some time After Nephrectomy, with Report of a Successful Case."

Discussed by Drs. H. Mynter and C. A. Powers.

Dr. Charles Jewett, of Brooklyn, read a paper, "Two Successful Cases of the Conservative Cæsarean Section."

Discussed by Drs. I. S. Stone, William S. Cheesman, H. Mynter, and Earnest Palmer.

Dr. O. E. Herrick, of Grand Rapids, Michigan, read a paper, "Operative Procedures for Displacement of the Uterus."

Discussed by Drs. Edebohls, Stone, and F. F. Dow.

Dr. I. S. Stone, of Washington, D. C., read a paper, "A Case of Extra-uterine Pregnancy; Death of Fœtus at Third Month, and Fatal Hemorrhage Outside the Sac at Fourth Month."

Meeting adjourned at 10.20 P. M.

Second Day.—*Morning Session.*

The Society met at 9.40 A.M., the President, Dr. Suiter, in the Chair.

A paper by Dr. George R. Fowler, of Brooklyn, "The Crossed Suture," was read by Dr. Delatour.

Dr. F. R. Sturgis, of New York, read a paper, "Notes on the Operative Treatment of Urethral Strictures."

Dr. Herman Mynter, of Buffalo, read a paper, "Compound Fractures and their Treatment."

Discussed by Drs. L. S. Pilcher, J. H. Packard, and Herman E. Hayd.

Dr. H. Bendell, of the Committee of Arrangements, announced the names of invited guests and made other announcements.

Dr. A. Jacobi, Chairman of the Special Committee on the matter of Abolition of Capital Punishment, appointed at the last annual meeting, pursuant to a communication on the subject from Gen. N. M. Curtis, read the following

Report on Capital Punishment.

Capital punishment has engaged the attention of all classes of men, in and out of office—citizens, lawyers, clergymen, legislators, and philanthropists. It has gradually, under ordinary circumstances, been restricted to such persons as have taken the life of a fellow-being. Those in its favor allege the propriety of retaliation, which, among so-called civilized men, becomes the exclusive privilege of the communities, and justify their position by referring to the Bible and the dictates of religion.

Those opposed proclaim their respect for the sacredness of human life under all circumstances, deny the right of the State to destroy it, and pro-

test against the community's imitating in cold blood the example of the very murderer whom it execrates for his brutality and cruel cowardice; they point to the degrading influence of executions, and also refer, as their justification, to both the Bible and religion. Thus capital punishment is both condemned and authorized by religionists, for the same reason that slavery, but thirty years ago, was both justified and censured.

The questions engaging the attention of this Medical Society of the State of New York are always scientific; they are practical only so far as they are dependent on and based upon science. No matter what any of our members believes or acts upon as a private citizen outside this hall, and outside the legitimate labors of his professional life; no matter what his political party allegiance is, or his creed and religious belief, here we are neither lawyers, nor legislators, nor retaliationists, nor religionists. Thus your Committee does not propose to ventilate the question of capital punishment, or its perpetuation or abolition, and the subjects connected therewith—viz., the nature of crime, of responsibility or irresponsibility, of the cerebral functions called judgment and will, the existence or non-existence of a free will and its limitations—from any other but an anatomical and physiological, that is, scientific, point of view. Your Committee holds that no questions but those strictly scientific and conducive to the hygiene of mankind have any right before your forum. What we must principally avoid is the reference to metaphysical speculations such as that of one of the greatest minds in history, Spinoza. He maintains that "in the mind there is no such thing as absolute or free will, but the mind is determined to will this or that by a cause which is determined by another cause, this by yet another, and so on to infinity." Nor must we allow ourselves to be swayed by an opposite consideration of Huxley's, who contests that "theft and murder would be none the less objectionable were it possible to prove that they were the result of activity of special theft and murder cells in the gray pulp." Objectionable! That they certainly are, for they are anomalies in themselves and disturbers of the equilibrium of social and moral economy. Objectionable they were, both the theft of a sixpennyworth when it was punished on the gallows as late as this very century, and that which is forgiven or mildly reprimanded by a humane judge of our time. More than merely objectionable is the murder of a fellow-being, whether it is expiated on the gallows, or buried in an insane asylum, or condoned by wire-pulling powers, or justified on the plea of self-defence.

Crime is the result of an evil impulse which ought to have been controlled. The controlling powers are the cerebral functions of judgment and will. Whoever is held responsible for their aberrations and his wrongdoings is termed, and punished as, a criminal. Whoever is considered irresponsible is no longer a criminal to be punished, but a lunatic against whose vagaries society takes pains to protect itself. Indeed, among civilized people, both the punishment of the criminal and the incarceration of the hopelessly insane are, or ought to be, but different modes of self-preservation. By them the theory of revenge and retaliation has been given up long ago. Their minds are more bent upon the preservation of the physical and moral health of the community than on the spiteful annihilation of the rebel against the common welfare.

The question of responsibility or irresponsibility is a very grave one, both theoretically and practically. The assumption of the adage "no free will exists" would explain and excuse and defend everything either friendly or inimical to the interests of society and the rights of the individual. Still, many high in science and literature and philosophy defend it.

Benedict, one of the best known and deservedly famous physiologists and pathologists of the brain, comes (*On the Brains of Criminals*, Vienna, 1879) to the following conclusions:

"The brains of criminals exhibit a deviation from the normal type, and criminals are to be viewed as an anthropological variety of their species, at least among cultured races.

"The constitutional criminal is a burdened individual, and has the same relation to crime as his next-of-blood kin, the epileptic, and his cousin, the idiot, have to their encephalopathic conditions.

"The essential ground of abnormal action of the brain is abnormal brain structure.

"The appreciation of these facts is likely to create a veritable revelation in ethics, psychology, and jurisprudence."

So it will, though not every crime be dictated by disease, and because the interests of the commonwealth require protecting and saving.

Responsibility and irresponsibility have but uncertain boundary lines. These cannot always be determined. They depend on a great many factors which may be fixed or changeable, stationary or transitory. The education of the young, no matter what his cerebral substance or general physical constitution, works only by influencing and changing his brain structure. Disturbances of the health of the body, and particularly of the brain, may either terminate in restitution to the normal estate quickly and easily, or with difficulty and late, or no recovery takes place at all. This difference in the result may depend on the severity of the attack, on a congenital disposition which need not assume the significance of a malformation, but shows itself only in differences in the power of resistance on the part of the cells or organs in the individual bodies; in the same way in which an infectious fever destroys the one, injures the other, and leaves the third intact and immune.

These varieties of structure, dispositions, and of powers of endurance and resistance are very interesting. There are many anomalies in the nervous system which tend, according to circumstances, either to recovery or to faulty development. Such are the predispositions, recognizable in infancy and childhood, to neuralgia, nervousness, melancholia, misanthropy, eccentricity, dudism, hysteria, hypochondria, inebriety, convulsions; the tendency to cardiac, vascular, and vasomotor irregularities, such as palpitations, fainting spells, vertigo, sudden congestions to brain and face. They are neither diseases nor crimes, but they may lead to both. Favorable or untoward influences determine the development of a hypochondriac into either a famous humorist, who makes tens of thousands of sturdy men smile through tears, or a homicide, who sends a shudder through men and women; or a boy suffering from congestive headaches may develop either into a heart-moving and soul-stirring poet or a raving maniac. For normal growth and exaggerated overgrowth are but two different results of the same vascular action.

The adult man or woman is the result of hereditary and congenital struc-

ture and disposition and a thousand influences of mental or physical nature. The former are but nominally different from the latter. Education is but the shaping of the brain by impressions, the consequences of which are physical, no matter whether they are permanent or transitory. When the former, they impress even the features of the face: deep must be the delineations in the nervous centre which are permanently photographed outside. Thus there are educational crimes like social crimes. The formation of the earliest habits is the determination of the character of the man. The dime novel, which spoils the taste and fires the imagination, is as certainly a source of infection as the exhalation of a sewer. Paul Aubry wrote in 1888 on the contagiousness of murder. With him the great factors in inducing it are heredity and degeneration. The latter, according to him, depends largely on education—in its widest sense. He charges the public press with producing crimes by its constant sensational reports which excite the imagination and lead to imitation by the persistent parading of an example. Thus are brought about the acts of cruelty during political upheavals, such as remind one more of insanity than of mere barbarism. His prophylaxis is based upon the same opinions. The prevention of the contagiousness of murder consists in a sound moral, individual hygiene, in the moralization of habits and customs, in proper regulations of the press reports, and in a more logical severity of the courts of justice.

Many of the physical changes which lead, or can lead, to criminality are preventable. The servant girl who lets a baby fall may maim it for life, or may so affect the brain as to change the current of thoughts and feelings into criminality. The development of a syphilitic infant into either a healthy man or an invalid, or the luckless possessor of a cerebral endarteritis or gumma, with their physical or moral consequences, depends on the diagnostic knowledge and the therapeutic agents of the practitioner. It is he who may be the intellectual father of the criminal. The obstetrician's clumsy forceps, or improper use of forceps, has frequently injured both head and brain. The prolongation of asphyxia in the newly born gives rise to thrombosis, hemorrhages, and secondary encephalitis, to paralysis, idiocy, epilepsy, or insanity. Thus a few seconds more or less, thus obstetrical knowledge and dexterity more or less, may decide the fate of the newly born, his physical, intellectual, and moral health or invalidism, and his whole future forever. Or, contemplate a few large rhachitic heads a few years old, after the disease has run its full course. Their circumference and shape are probably the same; ossification has been completed for some time, and no great alterations will ever take place. In all of them rhachitis was mostly cranial and cerebral. One has attained a normal development: one has developed an unusual amount of brain in the vacant space, and the vascular irritation has added to its vitality and evolution into the growing genius: the last is a confirmed hydrocephalus with its future semi-paralysis and idiocy. Why these differences? Why—in one case the condition was recognized in time and treated judiciously; in the other some domestic absurdity of diagnosis—difficult teething—was furnished by the ignorant mother and meekly accepted by the medical man. Thus the same big head may mean either perfection or incom-

petence, and it takes more than a jury of fellow-citizens to decide what is going on inside.

Psychical diseases or anomalies, both acute and chronic, are frequent under toxic influences. Infectious diseases in their acute stages give rise to acute attacks quite often. Scarlatina, typhoid and puerperal fevers, poison the blood and impair cerebral action by the mere circulation of the ptomaine, though there be no complication with meningitis at all. Even in children, insanity, both maniacal and melancholic, has often been met with in and after infectious fever. Many of the child murders during the puerperal stage were the results of puerperal infection. Opium and the other narcotics—belladonna, hyoscyamus, stramonium—have similar results of depraving both the judgment and will-power. The Chairman knew a woman who took at once a number of doses of cannabis which were given for medicinal purposes, and in her jocose aberration of mind was found dancing and singing round the stove on which she was roasting her baby. Next day the medicinal mania wore off. It took hard work to save her from the gallows. Ergot sometimes, more frequently iodoform, oxide of carbon, and the sulphide of carbon of the India-rubber works act in the same way. And alcohol? The delirium tremens and its many criminal acts fill the records of both the hospitals and the courts of justice. Still more dangerous, because more numerous, are its chronic effects. Its ethical depravation equals its æsthetical ugliness: mendacity, feebleness of will-power as bad as physical tremor, idiotic torpor, and the delirium of jealousy and violence, the habit of idleness and tramping, thieving, and outrages of all kinds, are the mottoes inscribed on its flag. Acute lead-poisoning leads often to the same symptoms as that of alcohol—sleeplessness, hallucinations, and violence like those of delirium tremens; and its chronic influence leads to results resembling those of progressive paralysis. Your Committee merely mentions cocaine, chloroform, chloral, bromides, to remind you of the many external influences which may slowly, silently, and surely, so alter the cerebral substance as to result in functional anomalies which, if understood, if recognized through that mute and hard cranial shell, as what they are, would be called diseases; when they are not they are called crimes.

The anatomy and physiology of the brain are greatly under the influence of the heart. Many chronic and some acute cases of dementia can be explained in this way. It is always the chronic class which is more dangerous because it is more difficult to notice and guard against. In many of them atrophy, hypertrophy, or congenital smallness; in others, adiposity or fatty degeneration, or stenosis of the aorta, with its consecutive cerebral anæmia and ill nutrition, or the obliteration of the pericardium; in very many the incompetent mitral valve, with its retarding influence on the intra-cranial circulation, is a cause of insanity or insane actions. The latter precede the recognition of the former a long time. A man whose name was prominently mentioned in connection with the New York dynamite affair was repeatedly before the courts for assault and battery and attempts at murder before his condition, appreciated and predicted by a member of your Committee, was finally acknowledged.

The diseases of the brain whose influence on and connection with mental

and moral diseases is undoubted are either local or general. In many, no other symptoms could be discovered, in others the intellectual and moral anomalies were complicated with other symptoms. To that class belong tubercles, which are quite common in demented persons, syphilitic changes, abscesses, either from emboli or atheromatous degeneration, neoplasms of different nature, and multiple sclerosis. Very frequent is apoplexy, either from vascular incompetency or traumatic. A boy of eleven years, under the observation of the Chairman of your Committee, fell from a tree and had convulsions which lasted for hours until hemiplegia set in. While his paralysis was slowly improving, he exhibited furibund attacks of violence with attempts at murder, and finally epilepsy, all of which improved after several years, leaving a moderate degree of paralysis.

Of the diffuse affections of the brain we shall only mention inanition from physical causes and from overwork and anxiety, and exhaustion from excesses, insolation, trauma, and other causes of hyperæmia and meningitis. Here belongs periencephalitis, which may begin slowly with physical symptoms, or with mania and hypochondriasis. Senility is a frequent cause of mental disturbance. Unfortunately, the symptoms of most of these conditions may resemble each other very much; delirium, mania of all kinds, mainly persecution mania, puerility, irascibility, diffidence, misanthropy, are just so many symptoms of both acute, subacute, and chronic forms. Epilepsy is a frequent cause of outbreaks of unexpected violence. This peculiarity gave it the name of propulsive epilepsy. Many criminal acts are the positive results of epilepsy, and many epileptics were cured on the gallows. At this moment a negro is under trial for a murder. He is known to have severe attacks of epilepsy. Experts have sworn he is a criminal. Experts have sworn he is diseased and not responsible. What does it teach? It teaches that there is surely reason for a doubt as to the causation of the criminal act. It would also teach that society as represented by the jury, and society as representing the humane spirit of the times, ought to keep a sharp lookout to its own dignity. Man may blunder, but society cannot afford to be brutally mistaken where it is at the same time accuser, judge, jury, and executioner.

The malformations of the male sexual organs, mainly anorchis and diminutive development of the penis and testicles, predispose to mental degeneration, with its consequences. One of your Committee knows a man of thirty-six with infantile organs and no trace of hair on the pubes. In spite of repeated warnings not to expose himself to utter failure, he attempted cohabitation. When alone with his partner he grew moody and desperate, becoming more than ever aware of his incompetency. In his rage at rendering himself ridiculous he attempted to strangle the woman; she finally succeeded in saving herself and delivering him to the police, which landed him in a penitentiary. Masturbation and emissions produce melancholia and mania; in milder forms depression, despondency, and moral obliquity. If you wish an example of monomania resulting from masturbation and excessive venery take that of a man otherwise gifted and in high esteem for many personal qualities—Tolstoi. His *Kreutzer Sonata*, the hero of which is evidently an autophotograph, is the nastiest and most vulgar glorification of male impo-

tence and consequent moral depravity possible. It is again the class of masturbators which furnishes part of the disgusting tribe addicted to sexual perversion, such as pæderasty, sodomy, and homicidal mania. Nymphomania I have not mentioned, because its complication with homicidal mania is but rare. But the influence of the great developmental periods—puberty and the climacteric age—in the production of moral morbidity is well appreciated.

Great difficulty in deciding the nature of a criminal insult is experienced in cases of periodic insanity. It is these cases which are received in lunatic asylums, retained for a short time, and then discharged cured to exhibit favorable statistics, or are freed by the philanthropoid cranks who mistake a hospital for a dungeon. The dangers of such premature or unauthorized discharges are great indeed; the daily press reports from time to time homicides and murders committed by men who ought to be protected against themselves and prevented from doing harm to others by being locked up for life. Intervals between acute attacks of mania or melancholia may last years; particularly, cases connected with epilepsy come suddenly like a flash. Moon and sun, terrestrial magnetism, and the electrical condition of the atmosphere, climate, telluric exhalations, intervening disease—be it only influenza, wounds, or other debilitating influences of short duration—are apt to give rise to violent outbreaks. In such cases the decision as to whether the accused was a criminal or a sick man when the murder was committed is very difficult, or even impossible. Years after the occurrence the diagnosis of the case must be attempted. The history of previous cerebral disease, of *petit mal* or full-grown epilepsy, neuroses and fainting spells, eccentricities, hallucinations, possible heredity, will be told with more or less significance. These are the very cases which prove unmistakably that insanity is not always typical and constant in its nature. Doubtful conditions are very frequent. And in the face of these facts a jury is expected, under the spur of one attorney and the derision of the other, to find a verdict of responsibility or irresponsibility. These are also the facts which have induced the Germans to establish the principle of a partial responsibility.

When a crime is made the subject of investigation the perpetrator ought to be subjected to the closest study. The action of an engine is not estimated or calculated without considering the shafts and wheels and boiler; but the changes of judgment and will are weighed too often by the so-called common sense of the illiterate or semi-educated. No matter whether Benedict and Lombroso are right or wrong, these facts are incontrovertible. You meet too large heads, too small heads, asymmetrical heads—such as you find so very often in epilepsy and idiocy—asymmetrical faces, disproportion between skull and face and their single parts; also disproportion between other parts of the body, excessive length of extremities, big mouth, overgrown tongue, the roof of the mouth too much arched or too flat, and the teeth irregular; the top of the head or the occiput flattened, hare-lip and cleft palate, heavy lower lip, deformed ears, and different colors of iris. There may be the retracted nasal insertion and the shortened base of the skull of the cretin or semi-cretin, or early neurotic symptoms—such as hysteria, chorea, epilepsy, night-terrors, and tachycardia.

Suicidal tendency with the result of repeated attempts at self-destruction is but rarely the result of instantaneous despair or despondency. In many cases the actors in that drama had an organic disease—among them lepto-meningitis in all its forms, sclerosis, syphilis, embolism, gray degeneration, adhesions, and cysts. Acute and isolated attacks are often the results of fever, in pneumonia, pleurisy, meningitis, typhoid fever, or influenza. And these are, in part, the cases which are thought worthy not of the hospital, but of the penitentiary.

Conclusions.—There are many causes of the perversion of judgment and will.

Those causes which are physical are either congenital or acquired. When acquired, they are so either by the progressive development of hereditary or congenital disposition, or by intervening diseases, or by the impairment of cerebral evolution through bad training, example, and social influences.

The variety of causes, both anatomical and functional, is such as to render an exact diagnosis extremely difficult. The sworn opinions of experts are quite often contradictory. Cerebral anomalies and lesions are very often not accessible to our methods of investigation.

When there is any doubt in an individual case of crime in regard to either responsibility or irresponsibility, it is safer to take the alleged criminal to be diseased and morbid than to declare the sick to be a criminal.

In many cases the innocent and the anatomically sick have been subjected to capital punishment. On the other hand, dubious cases developed full-grown dementia soon after the criminal proceedings.

The knowledge of such occurrences is part of the reasons why juries are averse to rendering the verdict leading to a death penalty, and why but a small percentage of murderers are ever sentenced among us, and why so many are set free to become permanent dangers to the safety of the public.

Human society and the State, while they owe protection and safety to all, must make no mistake unless it be in the direction of leniency and humanity.

The medical profession must not allow mistakes to be made which can be prevented. This Medical Society of the State of New York—having the advantages of physiological knowledge and being aware of the difficulties of being always correct, and of the absolute impossibility of making a positively safe diagnosis in every case of alleged crime or presumable cerebral disease or anomaly—expresses its opposition to the perpetuation of capital punishment and its hope that means will be found to protect the community by less uncertain and less inhumane methods.

Respectfully submitted,

A. Jacobi,
W. C. Wey,
B. F. Sherman.

After some remarks by Drs. D. B. St. John Roosa, W. W. Potter, S. B. Ward, and A. Jacobi, the report was accepted, the Committee continued another year, and a thousand copies ordered printed for distribution in such manner as the Committee might suggest.

Dr. Frank Madden, of Plattsburgh, presented a communication

from the Clinton County Medical Society, proposing an amendment to Section 2 of Chapter 833 of the Laws of 1873, being "An Act to Regulate the Fees of Coroners," so as to read as follows:

A coroner shall have power, when necessary, to employ not more than two competent surgeons to make post-mortem examinations and dissections and to testify to the same, the compensation therefor to be a county charge; and every physician and surgeon so making said external post-mortem examination, and attending and testifying to the same before the inquest held by said coroner, shall be entitled to a fee of ten dollars in each case; and the compensation for making an autopsic examination of the body or any portion thereof, when necessary and ordered by the coroner, shall be twenty-five dollars in each case.

On motion, the communication was received and referred to the Committee on Legislation.

Dr. L. S. PILCHER, of Brooklyn, read a paper, "Intra-venous Saline Infusion for the Relief of Shock and Acute Anæmia."

Discussed by Dr. Samuel Lloyd.

Dr. J. H. PACKARD, of Philadelphia, Pa., read a paper, "Surgical Shock."

Discussed by Drs. A. Vander Veer, L. S. Pilcher, H. Mynter, Robert F. Weir, and Robert T. Morris.

A discussion on the "Surgical Management of Genito-urinary Calculus" was presented.

Dr. JOSEPH D. BRYANT, of New York, read a paper, "Stone in the Kidney: Diagnosis, Indications for Surgical Treatment."

Dr. LEWIS A. STIMSON, of New York, read a paper, "Stone in the Kidney: Surgical Treatment."

Dr. ARTHUR T. CABOT, of Boston, Mass., read a paper, "Stone in the Ureter."

Dr. EDWARD L. KEYES, of New York, and Dr. L. BOLTON BANGS, of New York, each read papers on "Stone in the Bladder: What Special Indications should Govern a Choice as between Lithotomy and Lithotrity?"

The Society took a recess at 1.40 P. M.

Afternoon Session.

The Society was called to order at 3 P. M., by the Vice-President.

Dr. ALFRED L. LOOMIS, of New York, read a paper, "Fibroid Disease of the Heart."

Dr. W. GILL WYLIE, of New York, read a paper, "Dilatation and Drainage of the Uterus for Disease of the Endometrium."

Discussed by Dr. William L. Polk, of New York; Dr. Mordecai Price and Dr. Joseph Price, of Philadelphia, Pa.; Dr. Paul F. Mundé and Dr. H. J. Boldt, of New York; Dr. Joseph Hoffman, of Philadelphia, Pa.; Dr. Eugene Beach, of Gloversville; Dr. J. L. McComas, of Oakland, Md.; Dr. F. J. Baker, of Lockport, and the author.

Dr. JOSEPH HOFFMAN, of Philadelphia, read a paper, "Ectopic Gestation: Its Comparative Symptomatology and Treatment."

Dr. E. W. CUSHING, of Boston, read a paper, "Vaginal Hysterectomy for Cancer."

Discussed by Dr. H. J. Boldt and Dr. Joseph Price.

Dr. MORDECAI PRICE, of Philadelphia, read a paper, "Drainage in Abdominal Work."

Discussed by Drs. A. P. Dudley, Joseph Hoffman, Joseph Price, and H. J. Boldt.

Dr. CHARLES STOVER presented the following report:

The Committee upon Nominations for Vacancies on the State Board of Medical Examiners begs leave to report that it unanimously recommends the nomination of Dr. Eugene Beach, of Gloversville; Dr. J. P. Creveling, of Auburn; Dr. B. F. Sherman, of Ogdensburgh; and Dr. A. Walter Suiter, of Herkimer.

D. B. ST. JOHN ROOSA, M.D.,
Chairman.
CHARLES STOVER, M.D.,
Secretary.

On motion, the report was adopted, and the gentlemen named were elected as nominees from the Society to the Board of Regents for two positions becoming vacant under the law on the State Board of Medical Examiners.

The Society adjourned at 6.30 P. M.

Evening Session.

The Society assembled at 8.15 P. M., in the Senate Chamber of the State Capitol, the Vice-President presiding.

The President, Dr. A. Walter Suiter, read his Annual Address.

On motion of Dr. B. F. Sherman, a unanimous vote of thanks was extended to the President for his Address.

The Society then adjourned to the Delavan House, where the annual dinner was held.

THIRD DAY.—*Final Session.*

The Society was called to order by the President at 10 A. M.

Dr. CHARLES H. PORTER read his report as Treasurer and also that of the Trusteeship of the Merritt H. Cash Prize Fund. Both reports

were accepted, and the former referred to an Auditing Committee consisting of Drs. W. H. Bailey, Eugene Beach, and William C. Wey. This Committee subsequently reported that the accounts were found correct; their report was accepted. (See reports at the end of Minutes.)

The Report of the Standing Committee on Hygiene, Dr. Laurence Johnson, Chairman, was presented by title and accepted. (This report will be found at the end of Minutes.)

The Report of the Standing Committee on Prize Essays was presented, as follows:

Your Committee on Prize Essays begs leave to report that only one essay has been submitted during the past year. While the Committee agree that this is worthy of commendation, they do not consider it as reaching that high degree of excellence which, in their opinion, should be the criterion of judgment in awarding this prize.

Respectfully submitted, GEORGE HENRY FOX,
Chairman.
EGBERT H. GRANDIN,
WILLIAM WARREN POTTER.

The report was accepted.

The Report of the Standing Committee on By-laws was presented by Dr. F. C. Curtis, as follows:

The Committee on By-laws would respectfully report that it has had under consideration the Amendment to the By-laws proposed by Dr. A. F. Currier and referred to it at the last meeting, which would make Section 3 of Chapter IV. read as follows (Amendment in *italics*):

"Every permanent member on his election shall pay an initiation fee of five dollars, and also the annual dues for the year in which he was elected, *but such dues shall not be chargeable if the member-elect were serving as a delegate at the time of his election.*"

The Committee recommend that the proposed Amendment be not adopted. Its intent is to relieve the applicant for permanent membership from payment of his annual dues for one year if, becoming eligible at the end of two years' service as delegate, he applies at once for membership, and for the reason that his dues as delegate for the third year will be paid by his society. It is altogether a matter of choice with him whether he shall apply for membership at once or wait until the expiration of his term of delegacy, so that he need not be affected by this complication, if it seems to him to be one.

Respectfully submitted, H. DEV. PRATT, JR.,
Chairman.
A. R. SIMMONS,
F. C. CURTIS.

The report, after some discussion, was adopted.

The Report of the Standing Committee on Publication was presented by Dr. Curtis and accepted. (See reports at the end of Minutes.)

Dr. DANIEL LEWIS offered the following, which was adopted:

Resolved, That the Medical Society of the County of Albany be requested to appoint an Auxiliary Committee on Legislation, of five members, to coöperate with the Standing Committee on Legislation of this Society when especially requested to do so.

Dr. W. W. POTTER presented the following report of the State Board of Medical Examiners, which was accepted:

To the Medical Society of the State of New York:

Although there is no provision in the By-laws of this Society on this subject, it seems proper to present in as brief and concise a manner as possible, a report of the proceedings of the State Board of Medical Examiners representing your Society in the administration of the medical law of 1890. Several meetings of this Board have been held, at the first of which an organization was effected and rules adopted. A circular letter containing the details of this organization was issued and sent to the members of the Society.

We desire more particularly on this occasion to report to you the result of the first examination held, and some particulars of the second examination, which was completed but a few days ago. At the first examination, held November 10th to 13th, 1891, eight candidates presented themselves for licenses to practise medicine and surgery in the State of New York. The result of this examination—based upon question papers on seven topics, each topic represented by fifteen questions, the candidate having the right to reject any five of the fifteen questions on each topic, and to be marked on the scale of ten points for each of the ten questions answered—was as follows:

Graduate of		General average.
Heidelberg,	1891	96.28
Edinburgh,	1891	95.64
Heidelberg,	1891	91.85
Leipzig,	1890	90.92
Beyrout, Syria,	1891	88.78
Cracow,	1891	86.85
Vienna,	1876	85.42

The eighth candidate was examined under the auspices of the Eclectic State Medical Society.

At the examination, closed on the 29th day of January, 1892, eleven candidates presented themselves whose answer papers have not yet been fully examined, hence the result of this examination is not yet known. Unless the law governing the duties and powers of this Board is altered or amended, the number of applicants will increase at each quarterly examination, until

finally, after August 4, 1892, no exemptions any longer existing, those graduated from our New York State medical institutions will come up before your Board for examination, when it is expected the number of candidates will reach to between three and four hundred during the year.

The income for defraying the expenses connected with carrying out the provisions of the law being derived from the fees paid by the candidates, it will readily be seen that thus far the expenditures have largely exceeded the receipts.

The utmost harmony has prevailed in the joint conferences of the three separate Boards held on two different occasions, and the spirit which pervades all, as judged from their deeds as well as words on these occasions, is highly creditable to the bodies which they represent. Your Board is encouraged in its work by the feeling that back of it stands not only the united sentiment of the profession in favor of the establishment of this higher standard of qualification for entry into the ranks of medicine, but by the further encouragement of the lay press and the public generally. If no change is made in the law as it now stands, in ten or fifteen years more it will be perfectly safe for any person to employ any physician in the most remote part of the State, as well as in the very centres of population, with the full confidence that the physician who has been called in to treat the patient, no matter what peculiar or particular "school" of medicine he professes, is well grounded in educational as well as scientific matters; that his attainments are such as have warranted the State in conferring upon him the license to practise medicine and surgery—not because he graduated from any particular school, or received the degree of doctor of medicine from any one college or university, but because his attainments were such as to entitle him to the confidence of those appointed by the State to administer its medical affairs.

Several attempts have been made, and others are still making, to amend the present law, having for their purpose the exemption of certain students now engaged in the study of medicine at various colleges throughout the State. To the minds of your medical examiners any interference with the present law would not only be unwise but hazardous in the extreme to the interests of the profession of medicine. We would, therefore, respectfully urge upon the Society that fitting resolutions be passed conveying the oft-repeated sentiment of the Society on this subject, and that close watch be kept on all bills introduced in the Legislature, lest the enemies of the present method neutralize or defeat them by securing improper legislation.

Respectfully submitted,

WILLIAM C. WEY,
President.
WILLIAM S. ELY,
WILLIAM WARREN POTTER,
J. P. CREVELING,
GEORGE RYERSON FOWLER,
EUGENE BEACH,
MAURICE J. LEWI,
Secretary.

ALBANY, February 2, 1892.

Dr. DANIEL LEWIS moved that the Society recommend to the State Board of Medical Examiners that a list of those who have passed successfully their examination before the Board be published quarterly. Carried.

Dr. HENRY FLOOD presented the Report of the Committee to which was referred the recommendations of the President in his Inaugural Address, as follows:

Your Committee begs leave to report that it has examined the Address carefully and the recommendations made. Your Committee suggests, in accordance with the recommendations of the President, that the following resolutions be adopted:

Resolved, That the Secretary of this Society be duly authorized to send a file of the *Transactions* of this Society to each county society subscribing for its quota of the *Transactions* for 1892, and to any public libraries that may be able to use them.

Resolved, That this Society heartily indorses the action of its President in assisting to make the coming meeting of the Pan-American Congress a success, and encourages any action of this Society or any of its members which in any manner will further the interests of that organization.

Resolved, That the Committee on Publication be instructed to omit hereafter from the *Transactions* of the Society the list of deceased members.

Resolved, That the Secretary of this Society shall examine the dates of the annual meetings of the county societies in this State, and that he shall notify the societies that hold their annual meetings later than May 15th, that this Society requests that an earlier date than June 1st be selected, that the list of officers of the county societies may appear in the *Transactions* of this Society the year in which the officers are elected and hold office.

Resolved, That the President, Secretary, and Treasurer, as a *Comitia Minora*, be empowered to adjust with county societies which are in arrears in such a manner as the Committee may deem best for the interests of this Society.

Resolved, That there shall be referred to the Committee on Legislation, with power to act, the following subjects:

1. To protect present medical legislation.
2. Asking for an increase of appropriation for Public Medical Library.
3. The abuse of medical charity.
4. The subjects of the Index Catalogue of the Library of the Surgeon-General's Office and the *Medical and Surgical History of the War*.

The above subjects were thoroughly discussed by the President in his Address, and your Committee believes that they come under the province of the Committee on Legislation.

Respectfully submitted,

HENRY FLOOD,
JOHN O. ROE.

The report was accepted, and with the several resolutions contained in it adopted.

Dr. JAMES D. SPENCER offered the following:

Resolved, That a special committee of seven, of which the President, Dr. Suiter, shall be chairman, be appointed to take into consideration all matters relating to the Pan-American Medical Congress, and do all in its power to aid and encourage the project and report upon it at the next annual meeting.

The resolution was adopted, and the following members, additional to the President, were appointed: Dr. A. Vander Veer, of Albany; Dr. Seneca D. Powell, of New York; Dr. James D. Spencer, of Watertown; Dr. William Warren Potter, of Buffalo; Dr. D. B. St. John Roosa, of New York; and Dr. John O. Roe, of Rochester.

Dr. LUCIEN HOWE called attention to the Anniversary Address of the President and the subjects treated therein, and moved that a committee of three, of which Dr. Suiter shall be the chairman, be appointed to confer with the medical societies of other States, with a view to some concerted action for the reëstablishment of the National Board of Health.

The motion was carried, and Drs. Lucien Howe and D. B. St. John Roosa were appointed the committee additional to the President.

Dr. P. A. CALLAN, of New York, read a paper, "Four Cases of Monocular Blindness immediately following Injuries of the Skull."

Discussed by Dr. Lucien Howe.

Dr. LUCIEN HOWE, of Buffalo, read a paper, "Methods of Advancing the Internal Rectus Muscle of Divergent Strabismus."

Discussed by Dr. Herman Bendell.

Dr. E. F. BRUSH, of Mount Vernon, read a paper, "The Danger of Milk of Tuberculous Cows."

Dr. S. R. MORROW, of Albany, read a paper, "Aluminium in Orthopædic Apparatus."

Dr. C. W. DEBAUN, of Fonda, read a paper, "Biliary Colic: Its Diagnosis and Treatment."

Dr. HENRY FLOOD presented the following Report of the Committee of Nomination:

The Committee of Nomination of the Medical Society of the State of New York would respectfully report the following nominations, all the members of the Committee present and voting affirmatively:

For President.—Lewis S. Pilcher, of Brooklyn.
For Vice-President.—Henry L. Elsner, of Syracuse.
For Secretary.—Frederic C. Curtis, of Albany.
For Treasurer.—Charles H. Porter, of Albany.
For Committee of Arrangements.—Herman Bendell, of Albany; Seneca D. Powell, of New York; W. J. Nellis, of Albany.

For Committee on By-laws.—H. D. Wey, of Elmira; A. R. Simmons, of Utica; F. C. Curtis, of Albany.

For Committee on Hygiene.—Lawrence Johnson, of New York; E. F. Brush, of Mt. Vernon; A. N. Bell, of Brooklyn; D. S. Burr, of Binghamton; Lewis Balch, of Albany; Wallace J. Herriman, of Rochester; O. W. Peck, of Oneonta.

For Committee on Legislation.—D. B. St. John Roosa, of New York; Daniel Lewis, of New York; Maurice J. Lewi, of Albany.

For Committee on Medical Ethics.—A. Jacobi, of New York; A. Ross Matheson, of Brooklyn; James G. Glass, of Utica.

For Committee on Prize Essays.—George Henry Fox, of New York; William Warren Potter, of Buffalo; John O. Roe, of Rochester.

For Committee of Publication.—F. C. Curtis, of Albany; William Warren Potter, of Buffalo; F. D. Bailey, of Brooklyn; Charles H. Porter, of Albany.

For Honorary Members.—Lewis S. McMurtry, Louisville, Ky.; Charles A. L. Reed, Cincinnati, O.; W. E. B. Davis, Rome, Ga.; Adam H. Wright, Toronto, Canada; James F. W. Ross, Toronto, Canada.

Eligible to Honorary Membership.—Graily Hewitt, London, England; O. E. Herrick, Grand Rapids, Mich.; I. S. Stone, Washington, D. C.; Arthur T. Cabot, Boston, Mass.; J. Lee McComas, Oakland, Md.; J. H. Packard, Philadelphia, Pa.; Robert Koch, Berlin, Germany; Joseph Hoffman, Philadelphia, Pa.; Mordecai Price, Philadelphia, Pa.; E. L. Shurly, Ann Arbor, Mich.; Heneage Gibbes, Ann Arbor, Mich.

For Delegates to State and other Societies:

To the British Medical Association.—R. C. M. Page, of New York; Homer L. Bartlett, of Flatbush; W. S. Ely, of Rochester; E. V. Stoddard, of Rochester; Henry Hun, of Albany.

To the Canadian Medical Association.—A. M. Phelps, of New York; E. B. Angell, of Rochester; Franklin Townsend, Jr., of Albany; L. Duncan Bulkley, of New York.

To the Ontario Medical Association.—D. V. O'Leary, of Albany; A. Ross Matheson, of Brooklyn; W. W. Potter, of Buffalo; J. P. Creveling, of Auburn; Herman Mynter, of Buffalo; Lucien Howe, of Buffalo.

To the Connecticut State Medical Society.—A. Vander Veer, of Albany; William H. Bailey, of Albany; J. V. Kendall, of Baldwinsville; Philander Collard, of Sing Sing; W. S. Cheesman, of Auburn; Eugene Beach, of Gloversville; William Browning, of Brooklyn.

To the Medical Society of New Jersey.—Samuel B. Ward, of Albany; Walter B. Chase, of Brooklyn; George R. Fowler, of Brooklyn; Charles A. Powers, of New York.

To the Medical Society of Pennsylvania.—H. D. Wey, of Elmira; C. L. Stiles, of Owego; Maurice J. Lewi, of Albany; James E. Nichols, of New York; Simon Baruch, of New York; W. E. Ford, of Utica.

To the Medical Society of Vermont.—E. H. Howard, of Rochester; E. F. Brush, of Mount Vernon.

To the Medical Society of California.—L. E. Felton, of Hanford, Cal.

To the Medical Society of Virginia.—George H. Fox, of New York.

To the Massachusetts Medical Society.—William H. Bailey, of Albany; William Maddren, of Brooklyn; C. B. Herrick, of Troy; John O. Roe, of Rochester; Peter R. Furbeck, of Gloversville.

The Committee begs leave in addition to present for the consideration of the Society the following:

Whereas, Dr. Samuel B. Ward has for so many years at a great personal sacrifice served as Chairman of the Committee of Arrangements, and

Whereas, He has firmly declined to allow his name to be used by your Nominating Committee for a continuance in that office; therefore, be it

Resolved, That this Society learns with regret of the determination of Dr. Ward to disassociate himself from the office which he has so ably and satisfactorily filled, and desires to place on record this minute of its appreciation of his services as Chairman of the Committee of Arrangements.

HENRY FLOOD,
Chairman.
MAURICE J. LEWI,
Secretary.

The report was accepted, and on motion the resolution offered by the Committee was unanimously adopted. The persons named in the report for the several offices were duly elected according to the recommendations of the Committee.

Dr. A. JACOBI offered the following resolutions, which were adopted:

Resolved, That the thanks of this Society be tendered to the municipal officers of the city of Albany, for the use of the rooms in this building for our Society meetings. The attendants have been watchful of our interests and attentive to our wishes, and we desire in this resolution to make record of the same.

Resolved, That a vote of thanks be tendered to the Superintendent of Public Buildings for his kind offices, and for the courteous treatment of his officials in and about the apartments of the Capitol during our session in that building.

The Business Committee read by title the following papers: "Therapeutics of Septic Diseases," by Dr. A. Jacobi, of New York; "Multiple Neuritis founded on the Observation of Twenty-one Cases," by Dr. William Wotkyns Seymour, of Troy; "The Application of the Death Penalty by Means of Electricity," by Dr. Carlos F. MacDonald, of New York; "Rapid Dilatation of the Cervix Uteri," by Dr. Walter B. Chase, of Brooklyn; "Cases of Glaucoma, Illustrating Different Modes of Treatment," by Dr. O. D. Pomeroy, of New York; "Our Cases of Refraction," by Dr. Francis Valk, of New York; "Rheumatoid Arthritis," and "Compound Comminuted Fracture of the Skull; Recovery," by Dr. William Stevens, of New York; "The Methods of Administering Galvanism in Gynecology," by Dr. W. E. Ford, of Utica; "The Personal Equation in Dermatology," by Dr. L. Duncan Bulkley,

of New York; "History of Two Cases of Sudden Death in the First Month of Pregnancy," by Dr. C. P. McCabe, of Greenville; "The Average Doctor," by Dr. Herbert Judd, of Galesburgh, Ill.; "The Teachings of Experience and of Rational Therapeutics as to the Treatment of Pneumonia," by Dr. Boardman Reid, of Atlantic City, N. J.; "Two Dermoid Cysts, with Intra-peritoneal Rupture; Laparotomy and Recovery," by Dr. William Hailes, of Albany.

Letters of regret were presented from Governor R. P. Flower; Hon. Robert Earl, Chief Judge of the Court of Appeals; Hon. John A. Vrooman; Drs. Juan Santos Fernandez, Editor of the *Crónica Medico-Quirúrgica*, Havana, Cuba; Theodore Deecke, Utica; George H. Rohé, Cantonsville, Md.; M. Storrs, Hartford, Conn.; G. H. A. Matte, North Adams, Mass.; J. H. Carstens, Detroit, Mich.; J. E. Reeves, Chattanooga, Tenn.; T. K. Holmes, Chatham, Canada; G. K. H. Kemper, Muncie, Ind.; H. D. Marcy, Boston, Mass.; L. S. McMurtry, Louisville, Ky.; Adam H. Wright, Toronto, Canada; James F. W. Ross, Toronto, Canada; Samuel Johnston, Baltimore, Md.; William H. Welch, Baltimore, Md.; C. S. Bond, Richmond, Ind.; T. H. Bond, St. Louis, Mo.; I. N. Love, St. Louis, Mo.; George Tilden, Omaha, Neb.; W. E. B. Davis, Birmingham, Ala.; William Pepper, Philadelphia, Pa.; Theobald Smith, Washington, D. C.; G. R. Shepherd, Hartford, Conn.; F. E. Beckwith, New Haven, Conn.; A. M. Owen, Evansville, Ind.; Horace R. Powell, Poughkeepsie; Heneage Gibbes, Ann Arbor, Mich.; H. L. Cookingham, Red Hook; Joseph M. Mathews, Louisville, Ky.; J. B. Andrews, Buffalo; Charles Smart, Major and Surgeon, U. S. A., Washington, D. C.; J. McF. Gaston, Atlanta, Ga.; William A. Edwards, San Diego, Cal.; Thomas M. Flandreau, Rome; Charles E. Sajous, Philadelphia, Pa.; William T. Bull, New York; E. E. Montgomery, Philadelphia, Pa.; J. Mills Browne, Surgeon General U. S. Navy; J. B. Hamilton, ex-Surgeon-General U. S. M.-H. S.; J. J. Chisholm, Baltimore, Md.; G. I. Cullen, Editor *Cincinnati Med. Journ.*; Young H. Bond, St. Louis, Mo.; C. H. Mastin, Mobile, Ala.; Hunter McGuire, Richmond, Va.; H. McKennon, Paris, Ill.; Walter Wyman, Washington, D. C.; J. M. Keating, Philadelphia, Pa.; W. B. Atkinson, Philadelphia, Pa.; M. H. Richardson, Boston, Mass.; Bayard Holmes, Chicago, Ill.; and Arthur S. Wolff, Brownsville, Texas.

Dr. A. Vander Veer offered the following, which was adopted:

Resolved, That the thanks of the Society be tendered to President Suiter, whose eminently successful administration of the duties devolving upon the Chair has rendered this eighty-sixth annual meeting a most interesting and important one to the members present as well as the profession at large.

The PRESIDENT said: Members and Delegates—One of the most successful meetings of the Medical Society of the State of New York is fast drawing to its close, and it is my great pleasure to guide you to the opening of another year of prospective prosperity.

When, one year ago, I was chosen from among so many so much better qualified in point of experience and ability than myself, to preside over the deliberations and destinies of this Society, an honor was conferred upon me of which the very greatest and most distinguished in any land might well be proud. I was sorely in doubt, in consideration of the magnitude of the task, as to my capacity to properly perform the duties of the high position, and sustain the well-known and hitherto unbroken line marked out by my distinguished predecessors. You can imagine then, to some extent, the pleasure and gratitude I feel when greeted with this kind and very generous expression of your approval—a gratitude which no feeble words of mine can fitly express.

I desire to place on record before I relinquish the gavel to other—and I sincerely hope better and more efficient—hands, my cordial thanks for the very hearty support and encouragement afforded me at all times and under all circumstances by the able and efficient gentlemen who consented to take active part in my administration. It can truthfully be said of the Business Committee that no task was too great for them to undertake, or burden so heavy as to cause them to shrink from assuming it; and no one who has never had experience in the management of the affairs of this great Society, can fully appreciate the tact and persistent application necessary to successfully meet the requirements imposed upon those who actively assume the duties of an administration. Thanks are also due to the Vice-President for his able assistance to the Chair during the sessions.

The grateful acknowledgments of the Society, as well as my own, are in full measure due to the distinguished guests from other States who have contributed so much to add character and interest to this occasion.

For the success of the special discussions we have to express our gratitude to Dr. Albert Vander Veer, who organized the gynecological, and to Dr. Seneca D. Powell, who arranged the surgical. The powerful influence of these distinguished gentlemen gave to these discussions a character which insured success from the start, and to them I desire thus publicly to extend the thanks which they each richly merit.

All will bear witness to the interesting character of the many papers read by the other able gentlemen who have made contributions upon individual subjects during the sessions.

The members of the Committee on Credentials have recognized the importance of their duty, and present a most satisfactory registration.

It only remains for me to state that I am pleased to acknowledge the continued and generous support of all the active members of the Society, without which I am confident my administration would have been a disastrous failure.

I congratulate you most cordially upon the choice of the talented gentleman who is to be my successor, and bespeak for him a conspicuous success.

Again expressing my deep sense of gratitude for your very generous consideration, I have the honor and very great pleasure of presenting Dr. Lewis S. Pilcher, the President-elect of the Medical Society of the State of New York.

Dr. Lewis S. Pilcher, the President-elect, being introduced, said: Mr. President and Gentlemen—I appreciate highly the compliment which has been paid to the portion of the profession of the State of whom I chance at the present time to act as representative. I appreciate also the very kind partiality which has caused the duties of the presidency of the Society to fall upon myself. As each year has demonstrated the increasing value and influence of the work of this Society, the responsibilities and labors of the executive head of the Society have continued to increase, and I accept them now with diffidence, especially in view of the distinguished success which has attended the efforts of my immediate predecessor. I accept them, however, with confidence, for I know that the success next year is to depend not so much upon the efforts of the one officer who apparently may stand at the helm, but that it will be secured by the full and generous coöperation of a large number of able members who are especially interested in the continued usefulness of this Society. I bespeak now your kind coöperation in the future, and pledge to all that in every way that may lie within my power the interests of this Society and the interests of the profession at large shall not be left to fail. I thank you.

The President then declared the eighty-sixth annual meeting adjourned.

Frederic C. Curtis,
Secretary.

The next annual meeting of the Society is to be held at Albany N. Y., on Tuesday, February 2, 1893.

REPORTS.

1. Treasurer's Report.

The Medical Society of the State of New York, in account with the Treasurer.

Received from County Medical Societies, Institutions, and individuals, as follows:

Balance on hand as shown by Treasurer's report, Feb. 3, 1891			$656 52
Albany	1891		20 00
Allegany	"		5 00
Broome	"		5 00
Cattaraugus	"		10 00
Cayuga	"		10 00
Chautauqua	1885 to 1891 incl.		70 00
Chemung	1891		5 00
Clinton	"		5 00
Columbia	"		5 00
Dutchess	"		10 00
Erie	1891 and 1892		50 00
Essex	"		5 00
Franklin	"		5 00
Fulton	"		5 00
Greene	"		5 00
Herkimer	1890 and 1891		10 00
Jefferson	1891		10 00
Lewis	1890 and 1891		10 00
Livingston	" " "		10 00
Madison	1889 and 1891		10 00
Monroe	1891		15 00
Montgomery	"		5 00
New York	1892		120 00
Niagara	1887		10 00
Oneida	1891 and 1892		30 00
Onondaga	"		15 00
Orange	"		10 00
Orleans	1889		5 00
Oswego	1892		10 00
Putnam	1891		5 00
Rensselaer	"		15 00
St. Lawrence	"		15 00
Schoharie	"		5 00
Steuben	"		10 00
Suffolk	1892		5 00
Tioga	1891		5 00
Tompkins	1890 and 1891		10 00
Ulster	1891		15 00
Washington	"		10 00
Westchester	1892		15 00
Yates	1890 and 1891		10 00
			$1261 52
Brought forward			$1261 52
Medical Department, Union University, 1891			5 00
Medical Department, University of Buffalo, 1891			5 00
Long Island College Hospital, 1891			5 00
Niagara Medical College, Buffalo, 1890 and 1891			10 00
Medical Association, Northern New York, 1891			5 00
Rochester Pathological Society, 1891			5 00
Utica Medical Library Association, 1891			5 00
Elmira Academy of Medicine, 1891			5 00
Initiation fees as Permanent Members from Drs. F. W. Ring, H. C. Palmer, James H. Curry, John T. Howell, C. W. Crispell, Darius S. Orton, Lewis Balch, C. E. Fritts, Eugene H. Howard, H. H. Dean, Orville C. Baker, F. D. Bailey, G. A. Evans, O. F. Kinloch, S. Z. Fisher, P. Collard, L. Boudrias, Wend. C. Phillips, L. S. Pilcher, H. D. V. Pratt, Jr., C. L. Dana, H. P. Loomis, T. E. Satterthwaite, J. Densmore Potter, D. A. Gleason, F. W. Marlow, Henry Root, Joseph Moffatt, C. F. MacDonald, L. A. Tourtellot, C. E. De la Vergne, F. E. West, A. H. Crosby, F. H. Bosworth, J. H. Hunt, Andrew Otterson, C. N. Cox (37)			185 00
Received from Permanent Members for annual dues:			
1	for 1888		5 00
4	" 1889		20 00
20	" 1890		100 00
207	" 1891		1035 00
6	" 1892		30 00
1	" 1893		5 00
	Total		$2686 52

Publication Fund.

2	volumes of	1807–31	$1 00
2	" "	1840–43	1 00
1	volume of	1860	50
1	" "	1861	50
1	" "	1864	50
1	" "	1866	50
1	" "	1868	50
1	" "	1877	50
1	" "	1880	50
1	" "	1882	50
1	" "	1887	1 50
2	volumes of	1888	3 00
9	" "	1889	11 75
50	" "	1890	62 75
338	" "	1891	423 25
		Total	$508 25
	General Fund		2686 52
	Interest accumulated on deposit savings bank		26 14
		Total receipts	$3220 91

Expenditures.

The expenditures for and on account of the Society, from February 3, 1891, to February 2, 1892, were as follows:

F. C. Curtis, services as Secretary	$350 00
F. C. Curtis, balance of salary due as Secretary for 1889 and 1890	50 00
F. C. Curtis, expenses of office and of Business Committee	82 81
C. H. Porter, services as Treasurer	150 00
C. H. Porter, postage and envelopes	22 40
C. H. Porter, paid Trunk Line Association to secure rebate of railroad fares for members	23 00
C. H. Porter, expressage on and handling of *Transactions*	18 66
Wm. J. Dornan, envelopes	6 25
Wm. J. Dornan, printing	28 50
Wm. J. Dornan, printing	2 00
Wm. J. Dornan, printing	2 25
Wm. J. Dornan, printing	16 85
Wm. J. Dornan, printing *Transactions*	1313 92
R. C. Schultz, stenographer	85 00
M. J. Wallace, agent, rent	75 00
W. A. Choate & Co. "	37 50
T. F. Romeyn, boxes	12 00
Ten Eyck and Lansing, insurance	21 00
F. M. Johnson, janitor	25 00
Carried forward	$2322 14

Brought forward	$2322 14
M. E. Stonehouse, directing envelopes	5 00
M. E. Stonehouse, directing envelopes	11 25
M. E. Stonehouse, directing envelopes	2 38
J. B. Stonehouse, Jr., services as page	6 00
C. Martineau, services as page	6 00
Quayle & Son, seal press	8 00
J. W. Morange, use of chairs	9 00
Harrison White, printing	2 00
Brandon Printing Co., printing	4 75
Brandon Printing Co., printing	4 00
Brandon Printing Co., printing	2 50
Taylor & Roberts, printing	9 62
Argus Co., printing	3 60
S. H. Wentworth	8 75
Committee on Legislation, expenses of	14 05
Committee on Legislation, expenses of	6 00
W. M. Stetson, stationery	3 43
N. Y. C. & H. R. R.R., freight on *Transactions*	3 55
N. Y. C. & H. R. R.R., freight on *Transactions*	1 90
Total	$2433 92

Recapitulation.

Total receipts	$3220 91
Total disbursements	2433 92
Balance in treasury	$786 99

County Societies and Institutions in arrears with the Medical Society of the State of New York:

Chenango, 1891	$5 00
Cortland, 1886 to 1891 inclusive	30 00
Delaware, 1885 to 1891 inclusive	35 00
Genesee, 1885 to 1891 inclusive	35 00
Niagara, 1888, 1890, and 1891	30 00
Ontario, 1885 to 1891 inclusive	35 00
Orleans, 1891	5 00
Queens, 1884 to 1891 inclusive	80 00
Rockland, 1884 to 1891 inclusive	40 00
Saratoga, 1885 to 1891 inclusive	70 00
Schenectady, 1891	5 00
Schuyler, 1880 to 1891 inclusive	60 00
Sullivan, 1889, 1890, and 1891	15 00
Warren, 1885 to 1891 inclusive	35 00
Wayne, 1885 to 1891 inclusive	70 00
Wyoming, 1885 to 1891 inclusive	35 00
Carried forward	$585 00

Brought forward	$585 00
Medical Department, University of New York, 1891	5 00
College of Physicians and Surgeons, New York, 1891	5 00
College of Medicine, Syracuse University, 1891	5 00
Bellevue Hospital Medical College, 1891	5 00
New York Post-Graduate School and Hospital, 1891	5 00
Medical Association, Northern New York	5 00
Total	$615 00

2. Report of the Merritt H. Cash Prize Fund.

Accrued interest at date of last report	$249 34
Accrued interest from Jan. 1, 1891, to Jan. 1, 1892	26 22
Total interest	$275 56
Paid Dr. Howard Van Rensselaer, February 13, 1891, prize awarded 1891	100 00
Interest balance available for prize	$175 56

The Prize Fund ($500.00) and interest ($179.31) are on deposit in the Albany Savings Bank.

Charles H. Porter,
Trustee Merritt H. Cash Prize Fund.

3. Report of the Committee of Publication.

The Committee of Publication, in due form, awarded the printing of the *Transactions* of 1891 to William J. Dornan, by whom the two preceding volumes were printed.

On account of the large amount of material which came into its hands, restricting the size of the volume to 500 pages was very difficult, and, in fact, it ran about 50 pages over this limit; to accommodate as much as possible, the Society lists were compressed and the list of deceased members and some other material usually carried was omitted, in which the Committee hopes for the endorsement of the Society.

It was printed at a cost of $1249.34, which is somewhat more than that of 1890, mainly on account of expensive composition of tabular work. The size of the edition was 850 copies. Members received their volumes August 7th. About 100 copies were sent to medical journals, libraries, and as exchanges with State societies and other exchanges, as directed by the By-laws. About 200 copies remain.

The volume contains 54 of the 71 papers presented at the last meeting, 400 pages being taken with addresses, the prize essay, and papers, a number of which are illustrated; 60 pages of minutes, committee reports, and obituary sketches, and about 100 pages of society lists.

The Committee recommends no change in the size, style, and composition of the forthcoming volume.

Respectfully submitted,

Frederic C. Curtis,
O. B. Douglas,
Albert E. Persons,
C. H. Porter.

4. Report of the Committee on Hygiene.

The Committee on Hygiene offer the following Report of the Committee on Hygiene of the New York County Medical Society, read by Dr. H. D. Chapin and Dr. A. Jacobi, November 23, 1891, and referred to the Committee on Hygiene of the Medical Society of the State of New York, on

The Unsanitary Condition of the Primary Schools of the City of New York.

report by dr. h. d. chapin.

Last year a report was made by the Committee on Hygiene of the New York County Medical Society upon the condition of certain primary schools. This report, which was based upon a careful inspection made by one of the members of the Committee, gave details of unsanitary and unhygienic conditions that were found to exist in seven primary schools. A later inspection showed that the same defects, in a greater or less degree, were present in other school buildings. The unhygienic conditions were, in brief, as follows: Most of the rooms were grossly overcrowded, and the individual classes were far too large. Only one teacher is allowed, by the rules of the Board of Education, to classes of little children that must number at least fifty, and may reach as high as seventy-five. The light was found to be bad in many class-rooms which are generally situated in the lower and inferior parts of the grammar-school buildings. As these buildings are often closely surrounded by adjoining structures, the lower rooms are comparatively dark, and the children's eyes are subjected to artificial light, or conflicting lights that must strain the sight. The ventilation is often defective, and the cubic air-space allowed to each pupil is insufficient. In the three lower classes of the primary schools the prescribed allowance of space to each pupil is seventy cubic feet; in the three higher grades, eighty cubic feet: while in the four lower grades of the grammar classes the allowance is ninety cubic feet, and in the four higher grades, one hundred cubic feet. The Board of Health requires that in tenement-houses the allowance shall be at least four hundred cubic feet, and in some cases six hundred cubic feet, to each person. Four hundred cubic feet are required for each lodger in the lodging-houses of this city. With a low allowance of cubic space to each child, there is no suitable way, in the older buildings, of letting out the exhausted air and substituting fresh air in its place.

It is obvious that even with a generous allowance of cubic air-space, if there is no way of constantly removing foul air, a room crowded with children will soon become close and stuffy. Finally, many of the primary schools are not properly provided with furniture. Reference is specially made here to desks and a proper place to hang wraps and coats. A recent investigation has been made of some of the primary schools that were the subject of last year's report, to see if any improvements have ensued. The school found to be in the worst condition then was No. 7, located at No. 60

Chrystie Street. This primary school was housed in three buildings, occupying the lower part of the grammar-school building at No. 60, an old rookery—formerly a tenement-house—next door, and a factory on Hester Street that had lately been patched up for this service. Although this school was then in an extremely bad condition, it is now worse, if possible, from the fact that the main building has been condemned as unsafe. The front and south walls are bulging and have to be supported by beams, and the entire building has been abandoned except the north wing, which is still occupied by part of the primary school. The children are thus crowded into the two adjacent buildings that are most inappropriate for such a purpose. The class-rooms in both the tenement-house and factory are small, with low ceilings, and are very poorly lighted and badly ventilated. The stairways and passages are narrow and tortuous, with thin wooden partitions separating many of the rooms. It would be absolutely impossible to empty these buildings speedily and safely in case of an alarm. There is a small, dark playground in the basement under the main building. It is difficult to understand how teachers and scholars can remain for any length of time in the polluted air of these buildings and not become ill. Although this whole establishment should be closed as a disgrace to the community from its combination of unhygienic conditions, it cannot accommodate all the poor children who apply for admittance. Since the main building has been condemned, only one thousand children can be crowded into the remaining parts, and other children, formerly accommodated, together with new ones applying, must remain at home or on the street.

Another primary school that was last year found to be in a bad condition is No. 20, located at No. 160 Chrystie Street. The main room was found to be dark and badly ventilated, being lighted principally by reflected light. As the reflectors, which were hung outside the windows, were broken and dirty, they were not of much service in increasing the light. Nothing has since been done to these reflectors, if one may judge from their appearance. All the class-rooms are dark and badly ventilated; but three of the worst are situated on the ground floor. One of these rooms opens out on water-closets on both sides, and is lit by gas. Outside of a small sum of money expended on painting during the vacation, nothing has been done to improve this school in the past year.

No. 53, on Seventy-ninth Street, between Second and Third Avenues, is in a better condition now than last year, owing largely to the fact that a new primary school, No. 17, has been opened on Seventy-seventh Street, near Third Avenue, which relieves the overcrowding of the former school. Several of the class-rooms have been furnished with desks, and the steam radiators are better protected. Two lots in the rear are now owned by the school, which, when utilized, will improve the egress and give a better playground.

No. 40, on Twenty-third Street, between Second and Third Avenues, is in the same condition as last year. The air is poor and the light defective in most of the class-rooms. The school is surrounded closely by tall buildings, so that most of the windows open into a sort of well that increases the

difficulty of ventilation. The two gallery-rooms in the rear have windows opening back on a stable, which have to be closed on account of the smell. They have side windows, however, which render some ventilation possible. The odor from the stable is especially offensive when the manure is removed. The closets are insufficient and not well ventilated, being situated directly under the windows of some of the class-rooms. While this school is overcrowded, Primary School No. 28, at 322 East Twentieth Street, near at hand, and in a much better sanitary condition, has vacant seats.

No. 69, on Fifty-fourth Street, between Sixth and Seventh Avenues, was found last year to be in a bad sanitary condition, and nothing has since been done to improve it. This building has a large tenement-house on the east, and is surrounded on the west and rear by big stables which have no cellars, and hence their subsoil drainage leaks into the school cellar, where two cesspools have been placed to collect the flow. The school was visited during the recent rain, and water was found leaking into the cellar from the side and rear in spite of the prolonged drought preceding this rain. The ground was wet under the furnace. It is not possible to keep this cellar dry and sweet in ordinary weather. The two side wings of the building are sandwiched between water-closets on both sides. There are two class-rooms filled with girls on the ground-floor of one of these wings, and both have a damp, musty smell. The corresponding ground-floor rooms in the other wing, formerly occupied by boys, have been abandoned on account the offensive smell from their closets. The air in this building is further contaminated by the odors from a stable directly in the rear. The refuse from this stable is collected in a small yard, and diffuses a bad smell as it is piled up and removed. A lot in the rear and one on the west side of the building is now owned by this school, and can be made of very great service in improving its sanitary condition by allowing all the class-rooms to be above the ground-floor. A proper drying-room is urgently needed, as, on the day of visitation, many of the children were sitting with wet feet and with no suitable place to put their damp wraps.

The question which naturally presents itself is, why all improved facilities are not immediately taken advantage of, and upon whom rests the responsibility of allowing some of the schools to remain in such a deplorable sanitary condition. The trouble lies in a divided responsibility. In studying this subject, the relations of three distinct bodies must be considered—namely, local boards of trustees, the Board of Education, and the Board of Estimate and Apportionment. Each ward is furnished with a separate Board of Trustees. Their authority is purely local—not extending beyond the ward—but all expenditures of any kind for school purposes within the ward must *originate* with them. The Board of Education cannot originate any expenditure in any ward. It has entire control, however, of all expenditures above the amount of $200 which have been procured upon request of the Board of Trustees. It acts in this respect as an advisory body. It fails in devoting a disproportionate attention to the higher grade schools at the expense of many of the primary grades. As the latter contain the majority of poor pupils, whose time is limited, they should have the best

facilities. The Board of Education as a body cannot incur any liability for which a specific appropriation has not been made by the Board of Estimate and Apportionment. The last body is the highest authority in the city, and revises the estimates of all departments of the city government. Although the Board of Education is not a city department, under the statute, but a board, nevertheless it derives the money for carrying on its work as if it were a department. The responsibility for the bad condition of any school may thus rest with its Board of Trustees, who may fail to exercise a proper oversight, and to request of the Board of Education funds for needed repairs or alterations. It may rest with the Board of Education for neglecting to heed any requests that may be made by boards of trustees, and by not making special and immediate request of the Board of Estimate and Apportionment for funds to remodel or rebuild certain old schools, particularly in the down-town districts. The Board of Education, as hinted above, is much to be blamed for the disproportionate attention it gives to the upper and more ornamental grades of schools to the neglect of those doing the primary and fundamental work. Almost invariably it is the latter that are in the worst hygienic condition. Finally, if the Board of Estimate and Apportionment refuses to vote a specific appropriation to alter or rebuild an old structure that is in a bad condition, upon a proper request by the Board of Education, the former board should be held directly responsible for the impaired health of any children attending such a school.

It may thus be understood how it has been possible for the schools mentioned in this report to remain for years in an unhygienic condition, owing to the divided duties and responsibilities of three separate and distinct bodies. In order to remedy this state of affairs, it would seem best to regulate the sanitary condition of the schools by calling in a fourth party, outside and independent of the former organizations. Such a neutral body exists in the Board of Health. A law should be passed authorizing this Board to exercise a constant sanitary oversight over the schools, but such law should be made *mandatory*. If a defect is discovered in a building by any citizen, it should be promptly investigated by the Board of Health, and, if substantiated, its recommendations for improvement should be made mandatory upon the body that shall be found responsible. In case such recommendations are not acted upon in a reasonable time, the Board of Health should have the power to promptly close the school. If one or two thousand children were suddenly placed upon the street, public sentiment would soon find out what body was responsible and compel it to do its duty.

Dr. Jacobi offered the following resolution, which was unanimously adopted:

Resolved, That the Board of Health of the Health Department be requested to use both its actual authority and its moral influence to secure for the school-children a sufficient amount of air, light, and accommodation, and to protect them from the dangers to their health unavoidable in the present condition of the majority of the common schools.

REPORT BY DR. A. JACOBI.

According to the annual report of the Board of Health of the Health Department of the City of New York, for the year ending December 31, 1890, there died of croup and diphtheria, between the years of 1866 and 1890, forty-three thousand persons, nearly all of whom were infants and children; and in the twenty years between 1871 and 1890, more than eighteen thousand of scarlatina. The estimate, therefore, of sixty-five thousand deaths from diphtheria and scarlatina within twenty-five years is not too high. As both of these diseases are spread by contagion, and, in the vast majority of cases, by contagion only, and for that very reason are preventable, the loss of life is an injustice committed against the dead and their families and against society.

The dangers of contagion by scarlatina and diphtheria are perfectly well understood. No general hospital must admit them. When a case makes its appearance in the wards it is sent to the isolation house, or, where there is none, to the Willard Parker or North Brother Island in charge of the Health Department. A hotel-keeper who understands his pecuniary advantage does not admit them. When a case breaks out he sends it off. But a week ago, within our personal knowledge, a child suffering from diphtheritic croup was so dislodged during inclement weather. If a hotel-keeper, however—such instances are quite frequent—believes it to be to his interest to conceal a case, it infects his rooms; but he does not believe it to be to his interest to destroy or disinfect curtains and carpets and to go into expenses for washing, rubbing down, or re-papering the walls. Thus the contagion is perpetuated. We happen to know of rooms and suites of rooms in big and expensive hotels in which we have met with cases of diphtheria several years in succession, the patients only being different, the disease germ, however, the same, and lodged in the same curtains and carpets.

If hotels mean to do their duty to the travelling public they must refuse to admit, or must expel, contagious disease. But what is becoming of the patients? Where are they to go? There is no place for them in all New York; even the few private hospitals in existence refuse to, and cannot, take them. We possess no *maisons de santé*, as they do in Paris. We ought to have many of them, for the number of strangers sick in New York is very great; they would be anxious to pay well for satisfactory accommodations. And what is becoming of those who are still well in a family in which scarlatina and diphtheria made its appearance? There may be no practitioner among you but has seen such things to occur as these: A family of strangers have been coming from or are going to Europe, or arrived from the country to stay here for a few weeks for the sake of a change and of enjoying the great metropolis of the Union. They are living in a few rooms, and have no accommodations but their bank account. A child is taken with scarlatina or diphtheria; they must either move or conceal the nature of the case if they can, while running the risk of infecting their whole flock.

Many have asked you where they can take the child; where to remove the well to protect them. New York has no answer to give. It is true we

have the Willard Parker Hospital, with its seventy beds, in a remote part of the city. Seventy beds, and twenty-five hundred cases are permitted to die annually! The Willard Parker Hospital owes its existence to the initiative steps taken in that direction by the State Medical Society in its session of 1882. The State Society's recommendation of establishing a special hospital for scarlatina and diphtheria was warmly endorsed by both the New York County Medical Society and the profession at large. It was hoped at that time that the Willard Parker would be but the first of a number of similar institutions, for it was believed that the benefit derived from that single one would be an encouragement to establish more like it. The need of them was well understood. In the inaugural address, delivered at the beginning of the session of 1882, the President expressed it in the following words: "It is certain that both scarlatina and diphtheria are contagious; also that the possibility and probability of contagion extends over the whole duration of the sickness, and is enhanced by the accumulation of the poison brought about by the accumulation of cases. Without thorough disinfection the poison is not destroyed, and remains active. It is also certain that when you enter a room full of healthy and boisterous children playing about the bed of one of them who is stricken with a bad or mild form of diphtheria or scarlatina, a goodly percentage of the smiling crowd will be dead within a week or two; it is reasonably certain that the immediate removal of the one who is sick, or of those who are still well, would improve the chances of the first, and probably save them all. It is also certain that a case of diphtheria in comfortable quarters in a well-to-do family, will infect its clothing, bedding, and all surroundings. The patient may get improved—have another attack more serious—may get well—will be taken again, more seriously than before, and the case will not be checked in its road to destruction except by removal from its quarters, which are replete with comforts, poison, and death. Several such cases we know to have been saved by their removal to a proper isolating room in a public institution. Every one of you has seen those who have been or could have been saved by removal and strict isolation. That holds good both for those who live in infected, unclean, and reeking neighborhoods, and for such as inhabit the better and best parts of the city."

But a few brief months before these remarks were uttered and the State Society took action, an official letter of the Health Department expressed the condition of things at that time as follows:

"Our reception hospital is the only place we at present have for the care of such cases. The reception hospital was built not for continuous occupancy, but merely as a place where cases of contagious disease may have shelter and be made comfortable while waiting for the arrival of the boat to convey them to the Island. Within the past year the buildings on the Island were so crowded with cases of smallpox, typhus and typhoid fever, that we have there no room for scarlet fever and diphtheria. Therefore, we have been compelled to take such cases as have been forced upon us and give them the best care we could at the reception hospital, though always at the risk of their taking some other disease. Our facilities for the care of such cases are so limited that we are often greatly embarrassed, being com-

pelled frequently to refuse patients admission for want of room, greatly to our own annoyance as well as that of the patients' friends."

Nine years have passed since. No improvement has taken place except in the facilities afforded by the Willard Parker Hospital and its seventy beds. The hope that the Willard Parker would be the first of many has not been fulfilled. It has accomplished all that could be expected, and nobody has had much fault to find with it during the few years of its existence. But it was a difficult task to obtain the appropriation to build it; and no Board of Apportionment was ever approached since to build more like it. Still we require a second Willard Parker near the Battery; a third at West Eleventh or Twelfth Streets, on the North River; a fourth between Sixtieth and Seventieth Streets, North River; a fifth—one at least—in Harlem. The most serious cases—exactly those which are most in need of hospital isolation and treatment—cannot be transported to a distant part of the city. The more numerous the accommodations will be, the more will they be appreciated and sought after; indeed, the Willard Parker is so distant from most habitations that the transfer of a patient is given up by many a family as a hopeless task, even where the existence of that charity is well known. This knowledge, however, is by far not universal. If there were such an institution in every part of the city, every householder would be acquainted with the fact, and the beds would not be vacant except in the seasons of comparative immunity.

A sad difficulty is that connected with the impossibility of protecting the well against contagion from a brother or sister sick in bed. The tens of thousands of families living in two rooms, one of which is dark, or in two lighted rooms with a few dark closets between them, or even those who have a whole floor to themselves, are in a hopeless position. Father and mother, or mostly the mother alone, takes care of the sick—and the well. No disinfection is of any use where the immediate contact is constant and unrestricted. Similar conditions are found even in better-to-do families that keep help. Where to send the well children? All their relatives and friends have children of their own, and refuse to accommodate those who have been exposed to the infection. So they have to remain until they are taken sick, and pay the penalty of poverty or of insufficient care on the part of the family, and on the part of society at large, either with temporary or permanent suffering or extermination.

The rich must not expect to escape contagion. For many years, and repeatedly, has one of us emphasized the spreading of diphtheria and scarlatina—particularly the former—by adults who have the mild form, and prove daily his old assertion that there is as much diphtheria out of bed and out of doors as in bed. School-teachers, business men, factory girls, hair-dressers, seamstresses, laundresses, domestics, carry the disease from tenement to mansion, from mansions to burying vaults. The well-to-do classes are endangered by every case occurring in a distant tenement, and the means to relieve the latter protect the former. Thus protection of the poor becomes self-protection to the rich. It is by nothing better than by common danger and misery that the solidarity of fellow-citizenship is proven.

Therefore, besides new hospitals to receive the sick as soon as they are taken, there ought to be stations, refuges—call them what you please—where those children could be housed until the sick at home have either recovered or have been removed, and their residences, bedding, and furniture have become thoroughly disinfected. The number of those thus cared for would easily grow into the hundreds, sometimes into the thousands. Houses arranged for these purposes ought to contain common dormitories, also private rooms for such as can afford to pay for superior accommodations. Fifty cents a day ought to pay fully for the accommodation of those kept in the wards, to be paid for by the families or by the city. Perhaps the appreciation of the blessing procured and of the calamities averted, both from individuals and the communities, by the execution of such a plan, will so impress a wealthy fellow-citizen as to induce him or her to make the experiment with a hundred or two hundred beds. The secular press, which for years has been so anxious to open its columns to the discussion of matters of hygiene and public health, can find no subject more conducive to public welfare than this. For the subject is no longer one of theoretical meditation, but one of practical citizen and statesmanship.

After the reading of the report the following resolution was unanimously adopted:

Therefore, Your Committee on Hygiene begs to move that the Medical Society of the City of New York pass a resolution urging the increase of special hospitals for diphtheria and scarlatina, and expressing its conviction that there is no better protection against the multiplication of contagious diseases over the whole city than by providing temporary homes for the numerous children gathered around a nest of pestilence, from which there is no escape except in flight.

The Committee on Hygiene submits the foregoing report upon the unsanitary condition of the public schools of New York, and on the need of special hospitals for diphtheria and scarlatina, together with the action taken thereon, which has been made to it by the Committee on Hygiene of the Medical Society of the County of New York, having been referred to your Committee by that Society.

LAWRENCE JOHNSON,
A. N. BELL,
C. L. STILES,
M. T. BABCOCK,
LEWIS BALCH,
WILLIAM C. BAILEY,
EDWARD CLARK,
Committee.

THE ANNIVERSARY ADDRESS.

THE PUBLIC HEALTH, AND SOME OF THE RELATIVE INCONSISTENCIES OF THE NATIONAL GOVERNMENT.

A Plea for the Establishment of a National Health Service.

By A. WALTER SUITER, M.D.,
HERKIMER.

Mr. Vice-President, Ladies, and Gentlemen: I approach this part of the duties which the By-laws impose upon me, as the presiding officer of this great and venerable organization, with a feeling of diffidence which, to be fully appreciated, must be experienced.

I cannot be unmindful, and would not if I could, my friends and fellow-members, of the extraordinary honor of being selected from among so many, so much more worthy and deserving, to occupy this dignified position hallowed by the memories of former associations which cluster about it, surrounded by an atmosphere, most brilliant, of intellectuality, character, and attainments impressive to an extent which almost beggars language to express.

Who of us, indeed, could but be impressed by the consciousness of standing in the place once graced by a Nicholas Romayne? By the indefatigable John Stearns, whose far-seeing wisdom and activity were most influential in gaining for this Society its corporate existence? By the versatile and illustrious Samuel L. Mitchell—he who dared to measure intellectual swords with the celebrated Priestley in an equal contest upon the principles of chemical science? By a Theodoric Romeyn Beck, the Nestor of forensic medicine in America, the industry and scientific achievements of whose life

continue to exert an influence not limited to the confines of his own country, but powerful still throughout the civilized world?

I trust it may not seem invidious to recall from a list so rich in character and distinction, such other illustrious names as James McNaughton, Alexander H. Stevens, Alonzo Clark, Frank H. Hamilton, Alden March, B. Fordyce Barker, John P. Gray.

Ladies and gentlemen, a chapter of exceeding interest might be written upon the lives, attainments, and associations of the sixty-five famous ex-presidents of this Society; it would necessarily comprehend the history of the marvellous progress of the medical profession of this great State for the century past.

I fain would speak at length of this bright and shining galaxy of stars, did time permit.

Like Cornelia of old, that paragon of excellent mothers, whose noble example illumines one of history's darkest pages, we proudly proclaim—as did she of the Gracchi—"these are our jewels."

In common with several of my distinguished predecessors whose expressions are on record, I have been greatly perplexed as to the selection of a subject which would be appropriately interesting, and so far free from the technique of purely professional considerations as not to tax unduly the patience of that part of my audience, who grace and honor the occasion by their presence, whose relations in life are such that their accustomed lines of thought materially differ from those which this Society, in its entirety, represents.

To endeavor to speak words of wisdom and instruction in the presence of the Medical Society of the State of New York, exemplifying as it does the very essence of the intelligence and progression of the medical profession of this vast continent, is a task which many, whose resources are much less limited than my own, might properly hesitate to undertake; but the task seems doubly difficult when the Society has for its guests so many distinguished representatives of the various walks of life, whose presence I have the pleasure to observe.

After much thoughtful consideration, I have determined to invite your attention briefly to some topics relating to the public health, and to some of the existing anomalous and contradictory situations which confront us in the governmental system under which we live.

There is no more truthful saying than the oft-repeated maxim,

"Public health is public wealth;" and in all the studies connected with political economy the preservation of life must, of necessity, be an important factor. Health and wealth are reciprocal terms. Give health to a nation, State, or municipality, and wealth and general prosperity will be the natural consequence. It has been conclusively shown by statistical observation that human life has a distinctly calculable financial value, and the material profit to the public weal of properly observed sanitary laws may thereby be accurately and instructively estimated.

Sanitary science is not of recent origin, but has ever, from the earliest times, engaged the thoughtful attention of men. Hippocrates, the immortal Father of Medicine, five hundred years before the Christian era, gave to it its first great impulse when besought to aid the magistrates of Athens in their sanitary regulations during the prevalence of the great and devastating pestilences of that ancient date. The Mosaic code of laws prescribe the most careful sanitary directions and restrictions for popular guidance. They were thus made religious observances, and were always faithfully followed by the Jewish nation, and are practised by the people of that race to the present day. It is said that "in mediæval and modern history they have often, even down to our own times, been spared the ravages of epidemics, when their Christian neighbors were perishing around them."[1] History informs us that in ancient Greece there was a chief medical officer of State, who was called the ἀρχιατρὸς. This officer was selected for his superior qualifications, and he was universally regarded as a most important functionary. Great attention was paid to the subject of the public health, and as medicine was believed to be a divine art, no department of the government was more popularly respected. Under the Roman emperors there were regularly appointed State and municipal health authorities. They were organized into boards, and divided into two classes, one of which, the Palatinate, was a part of the national government, and the other, called *archiatri populares*, was attached to the municipalities and towns. The latter were organized into colleges or councils in the various towns throughout the empire, and they were not only required to carefully guard the public health, but to them the additional duty was assigned of supervising the courses of study in the medical schools;

[1] Encyclopædia Britannica, art. "Hygiene."

and no physician could legally practise the medical art until his qualifications had first been passed upon by this board of archiaters and reported to the magistrates who granted the license. It thus appears that these were boards of health and boards of medical examiners combined, and that in that remote period the State properly recognized the relation of the educational qualifications of the physician to the public health. It is interesting to note how history seems to be about to repeat itself in these modern times; but still more interesting to observe how much time and argument have been required to bring the public, and especially its law-making bodies, to a true appreciation of a public health service in its relations to the State.

During the Dark Ages very little can be found upon the pages of history relating to public sanitation, but they teem with mournful descriptions of ravaging epidemics and the powerlessness of the people to stay their devastations. Ignorance and superstition reigned supreme, and the "visitation-from-God" idea prevailed. The first regulation of which there is record relating to public health in this period of history was the enactment of a law for the prevention of infectious diseases in Venice in A.D. 1127. This was followed two centuries later by the establishment of quarantine by the Venetian authorities, owing to the prevalence of leprosy in Italy and France.

During ancient and most of modern times it may be said that the measures adopted for the preservation of the public health were entirely of an empirical nature, and had no scientific basis; and the science of sanitation is really of very recent origin, practically having its birth when the intelligent study of vital statistics within the present century gave to it a mathematical character, and thus began its march toward a place among the exact sciences. From this reliable beginning within the past half-century wonderful progress has been made, until it may be stated that there is at the present date no civilized nation on the earth that has not an organized system for the protection of human life and the prevention of disease.

Preventive or State medicine has come to be a distinct department of study in England, France, and Germany, and to some extent in the United States. In England there is a college of State medicine, and by recent enactment no medical officer of health can be appointed unless he possesses a diploma in public health.

The history of public health legislation in the United States—and to it I desire to direct especial attention—need consume but little time. Beginning with the passage of laws for the regulation of quarantine in the colony of Massachusetts Bay in 1648, the province of South Carolina in 1698, Pennsylvania in 1699, Rhode Island in 1711, New Hampshire in 1714, and New York in 1755, each enacted laws for the protection of the people against the importation of contagious and infectious disease. It was not, however, until 1799 that control of quarantine was assumed by the National Government, when Congress passed "An Act respecting quarantine and health laws." By this Act, which still stands upon the statutes, the "civil and military authorities were empowered to aid in the execution of the health and quarantine laws of the several States." This Act was from time to time modified, repealed, and reënacted until 1878, when the whole control of the national quarantine was conferred by Congress upon the Marine-Hospital Service, a medical division of the Treasury Department established in 1798, and originally designed for the relief of sick and disabled seamen of the merchant marine.

Stimulated by threatenings of a great epidemic of pestilence in 1871, the American Public Health Association, a voluntary organization composed of the most eminent sanitarians of the country, was formed. It had for its object "the advancement of sanitary science, and the promotion of organizations and measures for the practical application of public hygiene." This body exerted a most powerful influence upon the public health legislation of the country, and especially upon the much-agitated question of the establishment of a central authority; and chiefly by that influence the law of 1879, creating the National Board of Health, was passed.

That Board consisted of seven members appointed by the President from civil life, and four *ex-officio* members representing the Army, Navy, Marine-Hospital Service, and the Department of Justice, and was charged with the duty of obtaining information on all matters relating to the public health, advising with the executives of the several States in relation thereto, and to have control of all matters relating to the public health, both external and internal. By the operation of the law all matters of quarantine were placed within the jurisdiction of the Board, and much commendable work was instituted and accomplished for the discovery of the cause and prevention of disease.

Unfortunately for the country, the duties of the National Board expired by the limitation of the Act in 1883, and Congress refused to grant the necessary appropriations for the continuance of its work; and thus, although the Board is still in existence, it is entirely shorn of its powers, and we are practically, in this great country which boastfully assumes to lead all others in enlightenment and civilization, without an organized central system of health administration, in which regard we are far behind the progress of the age.

One of the greatest benefits accomplished by the National Board while it had active existence was the influence exerted toward the establishment of health systems for the States and municipalities throughout the Union. The impetus which it gave has resulted in the organization of State boards in nearly every State, all of which are doing most excellent work, and in turn are fast completing systematic and efficient municipal organization of a similar character, with the present prospect that at no distant date there will be no municipality or township without its local sanitary board.

In thus pointing out the principal facts in the history of public sanitation in this country, I fully realize that most of you are as familiar with them as myself; but as many who listen are unfamiliar with such topics, and as I desire that the statements made shall serve as premises for some parts of my remarks, I trust I may be pardoned for their repetition. It possibly may also appear that I should offer some apology for bringing to the attention of this body a subject which may be considered of purely national character. I believe, however, that of all matters relating to the public weal no department has greater importance to the citizen at large, none has more preëminent or more universal interest than that which is concerned in the protection and care of the public health by the public service. Moreover, it appears to me that the time and place are both opportune for the presentation and agitation of a topic in which the whole population of this great Republic must, in the very nature of things, feel a deep and abiding concern. No true and patriotic American citizen would permit himself to rest contentedly under the imputation that his national Government, founded upon the unalterable principle of equal and exact justice to all its people as to "life, liberty, and the pursuit of happiness," is not the greatest, the grandest, and most promising among all the civilized nations of the earth. By its wise and beneficent laws, its

social system, its material progress and power, its wonderful resources, its charitable institutions and public schools, it deserves and commands the admiration of the world; and yet it is easy to demonstrate that in respect of that most important and highest function of a State—the protection of the lives and health of its inhabitants—our Government to-day when compared with other enlightened nations, occupies a position singularly inconsistent and anomalous, and contradictory, quite, of the eternal and immortal principles to which it owes its birth.

Having directed attention to the meagre and unsatisfactory condition of public health legislation from the establishment of this Government, it now becomes pertinent to inquire: Should there be a national public health service in the United States, and what should be its character and scope?

All the experience of nations, and, indeed, that of this country during a brief period, proves the affirmative of the first proposition. Enlightened public opinion, public safety, popular education, and the combined interests of the great commercial communities demand it. The advancement of medical science, the stimulation of original and experimental research into the ultimate causes of disease, and the means of prevention and cure, require the powerful aid of the national resources for their development. There has been and is a mistaken idea that a national health system has no further province than the establishment of quarantine regulations as a defence against *foreign* pestilences, and that such a service is needed only when threatenings of such calamities are apparent. There can be no greater misconception of the true scope and purpose of a central health department in a government than this. While it is by no means proper to depreciate the desirability of an effective quarantine, or to belittle its importance, it must be remembered that much more is needed to protect the health of a nation than methods designed only for the purpose of warding off the few foreign diseases which exceptionally visit our shores. Cholera and yellow fever are indeed to be dreaded, but can it be said that they are more formidable or important causes of death than many of the infectious diseases which are indigenous to our soil? Let the statistical records of diphtheria, typhoid, and scarlet fevers, and last—and greatest—consumption, furnish the answer!

The scope of a national health department should be, in greater part, educational in character, and the regulation of the external

quarantine stations, which is now safely intrusted to a subordinate but efficient bureau of the Treasury Department, should be but a tributary division of the general system. This system, then, should comprehend far more than the mere adoption of means and methods for the prevention and subduing of possible pestilential visitations. It should be an organization "with every needed scientific appointment" for the elucidation of all the intricate problems connected with the care and protection of health and life within our borders, whether dependent upon causes foreign or domestic, "and fully capable of tracing out all the hidden sources of disease, whether confined to the air, the soil, the water, or the food; in the dwelling, the workshop, or the manufactory; in the public school or the place of resort. Everything which affects the development, growth, maintenance, and long life of the individuals or classes of a community fall legitimately within the scope of its inquiry."[1] It has been said that "ignorance of the laws of health has conscripted more people for the grave than all the battle-fields of the world," and that "the great plagues which swept over Europe during the Middle Ages caused more deaths than all the wars of a century." Hence the greatest function of the State would seem to be to provide the means for the education of its wards, the people, to the proper observance of the laws of sanitation, without the scientific application of which untold suffering, direful disaster, and premature death must be the inevitable consequence.

A central or governmental health system such as I have indicated and would propose should not, then, merely include the search for the means to ward off and combat threatened pestilence. It should also comprehend the thorough investigation into the causes, both remote and immediate, of the pestilence itself; and such researches should not be allowed to depend, as is now the case, upon the private sacrifices of the personal comforts and opportunities of the noble devotees of science, to whom the constant demands of the *res angusta domi* are ever present, and whose only hope of reward is the consciousness of having contributed toward the alleviation of human distress and the possibility of an immortal fame. It should include within its scope the fostering of prolonged and exhaustive experimental researches into the ultimate principles of all the great

[1] Dr. Stephen Smith: Report of American Public Health Association, vol. ii.

[2] Hon. W. I. Babcock: Presidential Address, Niles Sanitary Convention, February, 1891.

and hidden physiological and pathological questions of our time. It should further include the investigation of all that relates to the causation of the many infectious diseases which may be considered native to this country.

It is a notorious and much-to-be-deplored fact that experience proves that our national Government, through its appointed representatives, has always paid far less attention to the value of *human* health and life than to that even of plants and animals, and I have been much impressed by the inconsistency of its position in this respect. The national Government has never yet lent the aid of its immense resources toward the endowment of any continued or uninterrupted effort in the line of experimental research in any department of science in which the preservation of the health and life of its citizens are concerned. It has persistently refused to grant adequate funds to the branches of service which have been established, even when impending calamities have made the need of immediate protection imperative.

The National Board of Health and the Marine-Hospital Service, both of which I have mentioned, and both of which are so organized that, with proper and adequate appropriations, they might institute investigations into the nature and causes of the diseases which afflict the human race, that would result in incalculable benefits to mankind, have always been hampered by lack of sufficient funds to properly discharge the duties for which they were designed.

In this connection let me quote from a recent report of the Marine-Hospital Service. In speaking of the investigation of the nature of yellow fever undertaken by the department, and insufficiently patronized by the Government, a distinguished officer says: "It will be acknowledged that our means of combating this disease, whether as hygienists or therapeutists, are very unsatisfactory. . . . It is a matter of very serious importance, and should receive for its solution very liberal aid from the Government of the United States. The disease may strike at any time on our shores with a deadlier hand than foreign foe. Patriotism grows exultant over political platforms wherein are mentioned the means of defence against an armed invasion, but not a voice is raised for the public health; and yet that flag for which millions are voted to uphold its honor with gunpowder will be found flying at half-mast over the vessel that brings pestilence to our shores. Costly public

buildings are erected, expeditions are sent to the North Pole, but the Government has been slow to make appropriations for the establishment of necessary quarantine stations, and has never yet made any sustained effort toward investigating this or any other disease."[1]

With reference to the National Board of Health a most ridiculous situation presents itself. It has had a constitutional existence for a decade, but was emasculated and deprived of its power after three years of most excellent work, which gave to the cause of sanitary science the greatest impulse it has received in this country for a century, by the refusal of Congress to appropriate the necessary funds for its continuance. During the time it was sustained it had a most vigorous existence, and demonstrated in an emphatic manner by its accomplished results the value and importance of a public health service to the people of the United States; it employed experts and instituted investigations into a great variety of scientific subjects pertaining to public sanitation; it sent commissions abroad to study the causes and means of prevention of the foreign infectious diseases; it began a most comprehensive investigation into the subject of the relation of soils to sanitation; it assisted and encouraged the organization of State and local boards of health throughout the country; and, it is stated, more than thirty subjects relating to sanitary science of national importance, which could not be properly studied except by Government aid, were especially investigated and reported upon by this Board during the time that the funds were supplied. It brought into concert of action all the State and municipal health authorities, and by this method succeeded in suppressing the greatest epidemic of yellow fever that ever visited our shores; it established a systematic steamboat and railroad inspection; organized refuge stations upon isolated islands for infected vessels to be properly fumigated; edited and published a weekly journal, which was generally distributed, and contained complete reports relating to the sanitary condition of all countries with which we have commercial intercourse. All this work and much more that might be cited was accomplished in the brief period of its existence.

The law which incorporated this Board made it a most representative organization, and it is doubtful if any other method which can be proposed will ever serve the public interest to better advan-

[1] Dr. John Guitéras: Report Marine-Hospital Service, 1888.

tage. Seven of its members were selected from the most eminent sanitarians of civil life, three to represent the hygienic branches of the Army, Navy, and Marine-Hospital Service, and one to represent the Department of Justice. And yet it was possible, under our sometimes curious political methods, for a junto of legislators, ignorant of the scientific purposes of the organization, by a few specious and even silly arguments, to inhibit and bring to a disastrous close all the benevolent undertakings which it had so auspiciously inaugurated. False ideas of economy were allowed to prevail, appropriations were denied, and nothing now remains of that once vigorous public service but its name, its fame, and its dignified constitutional organization.

I call attention to these facts more especially to show how forceful is the argument which calls for the establishment of a health department in this Government, and how abundant is the testimony that, with proper and adequate encouragement given to it by public endowment, we could without doubt lead all the nations of the civilized world in the inauguration of researches and reforms of the utmost value to the comfort and happiness of mankind. It is a most humiliating fact that in all these respects, owing to the shameful neglect of our law-making bodies, we are placed in a position far behind that of all the other enlightened nations of the world, when our institutions, abundant natural resources, and substantial advancement in all that pertains to progress in civilization unitedly demand that we should *lead* rather than follow.

Why should Germany, France, and England be permitted to claim a monopoly of all the wonderful discoveries of the present age? Have their scientists greater inventive genius or brighter intellect than those of our country? Must we concede that in the governmental system of those countries there is greater or more paternal regard for the lives and welfare of their citizens?

There is an easy way to solve these problems, and it is largely to differences in the political systems that we must look for the explanation sought. A *popular* government has its advantages, but there are advantages to science in the unlimited prerogatives of an autocratic monarch which seem to be impossible under democratic or representative governmental methods. How quickly did the German Emperor recognize the immense advantage to his country and his reign of the great possibilities connected with the studies of Koch, and how ready was he to furnish the means from the national

treasury, independently of politics or elections, to encourage him in his efforts!

The endowment of research in science by governmental patronage is a fruitful theme, and it very naturally finds a place within the scope of the purpose of my remarks; but when we consider the history of other nations in this regard, the desire to draw comparisons is irresistible. Let me call your attention to some facts in this connection which may serve to emphasize our relative situation, and, I trust, may point the way for reform, which would place us in the line of that swelling tide of progress characteristic of our times. The very highest honors are conferred upon individuals in Germany, France, England, and many other countries by the government for distinction in original research. Titles and decorations are granted them, and they are not only endowed with opportunities, financial and otherwise, to urge them on, but they are granted livings and pensions galore. For example, Cuvier by France, Berzelius by Sweden, Liebig by Germany, Jenner by England, were ennobled, public grants were awarded them, and public statues were erected in their honor and to their memory. Koch and Pasteur, of our own time, have been made the recipients of honors, titles, and material assistance in the line of hospitals for their experimental use, and laboratory privileges and facilities far beyond the dreams of the patient plodder and self-denying investigator in republican America. Here, with the wealth-worship and restrictive parsimony of our legislators, no inducement is offered the student whose tastes and natural qualifications lead him to devote his life and talents to original research; and unless he be possessed of a competency, he has no alternative but to turn his attention from his cherished object and devote his best energies to the practical necessities of life, biding his time and chance for the opportunity to do otherwise. The world-renowned and immortal Agassiz conferred upon the United States the great prestige of his name and undying fame, for what return? The paltry privilege of free transportation to the fields of his investigations upon Government vessels, while his wonderful labors and achievements for science were fostered and subsidized by the munificence of private individuals!

The English Government maintains a most excellent and systematic public health service. It annually grants funds for scientific researches to the Royal Society and to individuals for special studies in matters relating to sanitation; commissions composed of the most

reputable scientists of the country are sent abroad, from time to time, to make special investigations of various diseases and subjects for the benefit of the public health. These commissions are maintained and subsidized almost without stint as to time or money. There is each year voted by the Government large sums for what are called "Auxiliary Scientific Investigations," which are instituted on the recommendation of the Local Government Board and the Medical Officer of the Privy Council. These sums are paid to skilled investigators and for the establishment and equipment of laboratories—physical, chemical, and biological. Great inducements and much encouragement are offered by special government endowment to individuals and societies to stimulate progress in original research. There is a commission at present in India under the patronage of the English Government, with unlimited facilities, charged with the duty of searching out and establishing the true etiology and pathology of leprosy; and another, with similar privileges, organized for the same duty with reference to rabies; and many other researches have been organized in times past for such objects almost without restriction as to time, apparatus, or money.

Contrast with this the lamentable experience of one of our own illustrious investigators, of whose fame every American is proud, and who is by no means unknown to this Society. Several years ago the necessities of the hour made it seem imperative to our Government to inquire into the etiology of yellow fever, and Dr. George M. Sternberg, U. S. Army, was commissioned to visit Havana for the purpose. He had scarcely arranged his equipment and appliances when, in the midst of some of his observations, which promised the greatest results, he was ordered to return, as the insufficient appropriation was exhausted. He once made a trip to Mexico and Brazil for the same purpose, with like results. It has been wisely said: "It is not in this manner that the patient and self-sacrificing labors, devoted to this end for many years by this distinguished scientist, are to be utilized."[1]

Germany enjoys the distinction of having given the greatest impulse to etiological and pathological research of any civilized nation in recent years. Why? Simply because that enlightened government recognizes the vital importance to its people of sanitary investigation; and we are indebted to it and its great Imperial Board of Health for much of the astonishing progress of our time in bac-

[1] Dr. John Guitéras: op. cit.

teriological science and many life-saving and disease-preventing methods. Its greatest scientist, Robert Koch, by his immortal discoveries, signalized the beginning of a scientific warfare upon the two greatest scourges of the human race, which will never cease until they perish from the earth—tubercular consumption and Asiatic cholera. Think of the possibility suggested by the now undisputed establishment of the pathogenesis, of the ultimate extermination of that fell destroyer—tubercular consumption—which in the United States alone fills one hundred thousand graves each year! Chimerical thought, say you? Utopianism? No—by all means, no! The time will come, and all signs are propitious that many who hear me now will live to note the truth of my prediction, when the final extinction of this dreadful disease will be accomplished; and shorn of its death-dealing power, it will take its place with the smallpox of to-day, which has practically "met its Waterloo."

Ladies and gentlemen, it is my belief that we are well advanced within the borderland of an era of progress upon these lines where wonders will be unceasing, and where the results obtained will not be by empirical methods, as at first characterized Jenner's immortal discovery, but "guided by the pure and certain light of science:" each victory won will be suggestive of another and a greater one beyond. The patient and industrious Koch proposes that the struggle "in this field of labor," against these "foes of the human race," shall be made the subject of an international contest for supremacy. How worthy would be the object! How beneficent the accomplishments! How noble the ambition! And in this vast enterprise where shall our beloved country be found? Shall we remain in "Darkest Africa," or shall we seize the opportunity to grasp the victor's crown?

I dwell to some extent upon the institutions of the German Empire, because in many respects it, in my judgment, furnishes a model. The resources of her splendidly organized Imperial Board of Health are practically without limit, and the premiums which she provides for excellence in research are such as to gratify the most aspiring of her students. Her universities and all educational institutions are directly under governmental control and patronage: all teachers are government officers, with salaries and pensions; honors and titles are among the prizes offered and frequently awarded to the votaries of science, and no opportunity is neglected to demonstrate the national appreciation of merit and achievement,

especially where the public benefit is concerned. In each of the leading universities the Imperial Government has established a hygienic institute, thoroughly equipped with lecture-rooms, special chemical, physical, and bacteriological laboratories.

Nothing could be more satisfactory to the student of science than the encouragement offered and material assistance provided to stimulate and foster progress in original research in biology, physiology, pathology, and the allied sciences by the Government of France. True to her history, both ancient and modern, in this regard, she still maintains, like Germany, a Department of Public Instruction, under which ministry the national patronage of her universities, colleges, institutes, academies, and learned societies furnishes the widest and most alluring opportunities for profound and extended studies to her distinguished savants. Recognizing with characteristic aptitude the vast importance to the public welfare of the elucidation of the theories connected with studies in science, and their application to the popular interests, the people of the French nation, through their governmental authorities, have ever stood ready to provide the means which place the patient investigator at once far above the necessity of personal effort in this direction. The world-wide renown of Louis Pasteur, the father of bacteriology, is chiefly the result of this system; honors, prizes, and pensions have been awarded him for his achievements in the study of fermentation, and it was easy for him to convince the authorities of the importance of his inoculation theory for the cure of hydrophobia. A fully equipped Institute was immediately placed at his disposal, and an abundant appropriation provided for the investigation and elucidation of the subject from a scientific standpoint.

What, think you, would be the result if one of our own scientists should make to the Government of the United States a similar application for a similar purpose? Experience teaches that it is more than probable that he would meet the same reception that was accorded to the immortal Morse, when he exhibited the then curious machine to the Congressional committee, and modestly asked for the pittance which was to inaugurate the development of the electric telegraph, the most stupendous scientific discovery since the beginning of the world. His instrument and himself were characterized as "cranks," and it is said that we are indebted to that circumstance for the origin of the colloquial use of that euphonious and now expressive term.

The French Government has recently established and subsidized a Pasteur Institute in Constantinople, for the purpose of bacteriological and etiological study, and stimulated by this circumstance, the Sultan of Turkey has been aroused to the importance to the public weal of revolutionizing the study of medicine and public sanitation, and has established a medical faculty in accordance with the system of the more enlightened nations; he has also granted government patronage and supervision to public hospitals throughout his empire. His Majesty has sent to foreign countries many distinguished students to study the most modern methods of scientific research, and has invited from France eminent physicians to perfect the organization of medical schools and hospitals. This is a very noteworthy circumstance, as a medical college has hitherto been unknown in Turkey. It also serves to emphasize the argument in favor of the endowment of scientific efforts by the State.

The recent history of far-away and so recently unenlightened Japan furnishes also a good example. Her parliamentary government, in the establishment of which the influence of the United States Government has been the greatest, has but reached its twenty-sixth year; and yet, in respect to the care of the public health and the endowment of scientific research, the "pupil has far outstripped the master;" a National Board of Health has been established, and is operating under the most advanced methods. She also constantly patronizes the distinguished students of the empire, and maintains her medical schools and hospitals.

All the universities of the Empire of Russia are government institutions, the professors being government officers holding rank and titles; classes of young physicians are sent abroad to study the various branches of medicine under renowned teachers; and endowments and facilities are publicly furnished to members of the medical societies of the country for scientific research.

Even disturbed and vacillating Mexico has a national health system, and maintains an attitude of patronage and control of her medical institutions and hospitals.

Numerous other comparisons of a similar nature might be cited in this connection, but I forbear, lest I weary you with detail. The inference to be drawn from such premises points, with irresistible force, to an amazing public indifference, and demonstrates with the greatest emphasis the culpable negligence of the people of this great and enterprising country to the preëminently practical subject of

the necessity for an organized effort for the preservation of life and the prevention of disease, the constant agitation of which should never cease until our rightful and logical position among the enlightened nations of the world is firmly and enduringly established.

I trust sincerely that by these references the impression has not been created that I take a pessimistic view of my country's institutions. I yield to no one in my admiration and love of American methods and customs; it is that very admiration and love, with a hopeful desire to see a shameful inconsistency corrected, which inspires me to speak these words. And here the question arises, Does our national Government do nothing to foster science and scientific enterprises? Yes; it maintains a Scientific Agricultural Department, and so abundantly provides for it that it has reached a position in recent years where it can successfully vie with any similar department in any land. Does this department now deserve the opprobrium which, sometime, was cast upon it, of existing only for the purpose of distributing garden seeds? I venture to say that if any argument is needed to demonstrate the importance and feasibility of a National Department of Health, it could readily be found in the history of the wonderful progress made in the science of Agriculture and the diversified interests connected with it in the brief period since it was elevated to the dignity of an executive department. Aided by appropriations lavishly bestowed by Congress, its scope and powers have been enlarged to such an extent that it has already attained to a sphere of usefulness and accomplished results which justify the pride and appreciation of every American citizen. Within its scope are included a great variety of divisional departments, having for their objects the technical observation and study of subjects relating to the care and protection of the health and lives of plants and domestic animals.

Among these numerous divisions—too numerous to allow of even mention here—there is maintained and endowed with most adequate appropriations by Congress, a Bureau of Animal Industry, wherein a systemized scientific study of animal pathology is pursued, comprehending the necessary investigations pertaining to the prevention and treatment of all the diseases to which the domestic animals of the country are subject. Renowned expert pathologists, microscopists, and veterinarians are employed and comfortably salaried, and laboratories and appliances are provided for the prosecu-

tion of this work, the success of which has been so great that, according to the latest report of the Secretary of Agriculture (to which I am indebted for many of these facts), the almost total eradication of the contagious diseases of animals has been accomplished.

Even greater things are done under Government patronage in the field of vegetable pathology, as witness the following quotation from the report just mentioned: "During the past year, as heretofore, the Division of Vegetable Pathology has devoted special attention to field work, having in view the prevention of plant diseases." Scientific assistants were sent abroad to establish laboratories for the investigation of the causes of all the destructive maladies of fruit-trees and plants, and the means for their eradication and treatment. "Agricultural experiment stations" (in which these investigations are made) "are now in operation in all the States and Territories except Montana and Idaho. Of the fifty-five stations in the United States, fifty in forty-three States and Territories receive their support wholly or in part from the United States treasury. The stations employ four hundred and fifty persons in the work of administration and inquiry. The mailing-lists of the stations include about three hundred and fifty thousand names." It is stated that these stations are the "recipients of the national bounty to the extent of considerably over a million and a half dollars annually."

The Fifty-first Congress of the United States has just passed into history. Among the many famous distinctions which it won was its title to the appellation, "The Billion-dollar Congress." Think of it, one thousand million dollars appropriated by a single Congress for the material interests of this nation! And in the multitudinous bills which provide for the disbursement of this enormous sum of money, *not one clause or paragraph appears which can, in any manner, be construed to apply directly to the elucidation of any one of the important and vital problems connected with the prevention of the infectious diseases with which the taxpaying people are constantly menaced or afflicted!* What apology can be offered for such a monstrous inconsistency?

Let us suppose, for example, that the jobs and misappropriations included in the fifteen or twenty million dollar river and harbor appropriations bills, which are annually passed with the greatest *éclat*, chiefly for the purpose of furthering the interests of scheming

and ambitious politicians, be applied to the encouragement of experimental research for the discovery of means for the prevention and cure of the infections and diseases which constantly menace the health and lives of the citizens of this great country, and we would have, without doubt, the best equipped public health department of any nation on the globe. Certainly I do not wish to be understood as opposing the protection of our harbors, and the improvement of our coast defences, with a few to the intimidation of a supposititious foe in *just possible* invasion, or the encouragement of the great monetary interests connected with our merchant marine. Neither would I wish to discourage the immense subsidies and land grants for transcontinental railroads; the building of the great warships for the new navy, of which we will all one day be proud; nor yet would I for a moment deny the importance of protecting the fish hatcheries, or the Alaskan seals, or the payment of the enormous sum which seems to be required to settle the dispute as to our rights in the Behring Sea, in order that the interests of our half-breed fellow-citizens may be properly protected and their employers satisfactorily aggrandized.

I would not undervalue the efforts which our Congress has made in granting appropriations for the establishment of agricultural experiment stations, and the employment of experts to investigate "bacterial and fungous diseases of caterpillars," for the purpose of discovering a contagious germ which may be artificially transmitted to the damaging boll-worm of cotton; or for the importation of the parasites of the cabbage-worm and Hessian fly; or for the payment of salaries of experimentalists on missions to Australia and New Zealand, to scour those infested lands to procure parasitic insects which would benefit the horticultural and agricultural interests of this nation!

I might carry this figure on almost *ad infinitum*. I might have exhausted my time and your patience had I undertaken to mention *all* this great Government of ours is doing and has done in vegetable pathology, botany, ornithology, mammology, entomology, animal pathology, and numerous other scientific departments. Assuredly, I believe that these are commendable undertakings, and doubtless valuable to the material and moneyed interests of our people to an extent which justifies the millions annually expended; but let me ask you to glance with me at another side of the picture. Does it seem possible that, with all these facts in view, the surpris-

ing statement can be made that the Congress which places such a high estimate upon the lives of plants and animals cannot find it consistent to appropriate one dollar for the preservation of *human* health and life?

Can it be that the free and enlightened Government of the United States, whose underlying principle is to "provide for the common defence," and "promote the general welfare," resourceful and prosperous to an extent far beyond the wildest conceptions of other civilized nations, having in its treasury an annual surplus of receipts over expenditures mounting high into the millions, does not appreciate the need of providing for "common defence" against an invisible and relentless foe—a destructive force at once intangible and imponderable, but powerful far beyond the reach of gunpowder and guns or arbitration boards?

At this point, and, in conclusion, let me formulate what I would propose, and what I hope in the near future to see established:

It has long been my conviction that there should be in this, as in every other nation, a systematically conducted central Public Health system, whether called a department, bureau, board, or otherwise; that it should have a responsible head; that it should have the co-operation, and assistance, when required, of all State and municipal boards and authorities; that it should be a distinct and separate branch of the public service, having powers, duties, and privileges entirely its own; that it should be unhampered and undisturbed by political circumstances or changes, with ample funds and facilities for the elucidation and treatment of all the great and perplexing problems pertaining to the prevention of disease. Whatever may be thought or said regarding the centralization of authority in a political sense, here, it seems to me, its advantages to the people of a nation are too apparent to admit the possibility of question. National control of public sanitation is "protection" in its highest and most beneficent signification.

My own conception of our present pressing need is as follows:

I would have the National Board of Health, as at present provided, rehabilitated, and charged with the duty of supervising particularly all matters of public health in the *interior*—calling it, perhaps, the "Health Department of the Interior;" I would have the Marine-Hospital Service, as at present constituted, especially clothed with powers relating to *external* quarantine; I would have both these departments retained, acting separately under ordinary

circumstances, and jointly in certain contingencies when they arise; I would have in connection with this Health Department of the Interior numerous experiment stations established, which should be entirely under Government patronage and control, and fully equipped with laboratories—chemical, physical, and bacteriological—each with an efficient corps of well-trained scientists, upon the same general plan by which the agricultural experiment stations, previously mentioned, are operated; I would have these scientific observers made Government officers, with salaries sufficient to insure against their personal wants, and pensions when retired, in order that their undivided attention might be given to the work for which they are employed; I would have them constantly commissioned to make original and experimental investigations into the ultimate causes of disease, wherever found, and required to report the results for publication and distribution.

As an auxiliary to this board, I would have a National Congress of Health to take the place of the present "Conference of State Boards," which shall meet at regular intervals—a representative body composed of delegates from each of the State and Territorial boards.

And when, as in logical sequence these proposed premises suggest, an *International Board of Health* shall be established, the most efficient state of development will be attained, and sanitary science will be a mighty messenger to indicate the approach of a perfected civilization, when the protection of the health and life of every human being will be regarded as the highest and most paternal function of the State.

Let us confidently cherish the hope that we soon shall see the day when the public indifference to this all-important subject will be overcome, and when our public servants will be induced to worship the powerful Mammon less and seek the beneficent shrine of the goddess Hygeia more. My friends, "preventive medicine" is the most momentous question of our time.

The late lamented Samuel David Gross, the illustrious sage, the prince of American surgeons, at the dedication of the monument erected to the memory of the pioneer of abdominal surgery, Ephraim McDowell, gave utterance to the following significant farewell words:

"Young men of America! Listen to the voice of one who has grown old in his profession, and who will probably never address

you again, as he utters a parting word of advice. The great question of the day is not this operation or that, not ovariotomy or lithotomy or hip-joint amputation, which have reflected so much glory upon American medicine, but *preventive medicine*, the hygiene of our persons, our dwellings, our streets—in a word, our surroundings, whatever and wherever they may be, whether in the city, town, hamlet, or country; and the establishment of efficient town and State boards of health, through whose agency we shall be more able to prevent the origin and fatal effects of what are known as the zymotic, or preventable diseases, which carry so much woe and sorrow into our families, and often sweep like hurricanes over the earth, destroying millions of human lives in an incredibly short time. The day has arrived when the people must be aroused to a deeper and more earnest sense of the people's welfare, and suitable measures adopted for the protection, as well as for the better development of their physical, moral, and intellectual powers. This is the great problem of the day—the question which you, as representatives of the rising generation of physicians, should urge, in season and out of season, upon the attention of your fellow-citizens—the question which above and beyond all others should engage your most serious thoughts and elicit your most earnest co-operation. When this great object shall be attained, when man shall be able to prevent disease, and to reach, with little or no suffering, his threescore years and ten, so graphically described by the Psalmist, then and not until then will the world be a paradise."

COMMUNICATIONS.

I. Discussion on the Surgical Management of Genito-urinary Calculus.

A. Stone in the Kidney. Diagnosis; Indications for Surgical Treatment.

By JOSEPH D. BRYANT, M.D.,
NEW YORK.

The diagnosis of stone in the kidney implies the consideration of its signs and symptoms, which terms will be employed synonymously by me to-day. The term "stone" is construed to mean a concretion that has a more pronounced individuality than sand, gravel, etc. Stone in the kidney may be either of primary or secondary formation. Primary deposits depend more for their existence upon the inherent or acquired tendencies of the patients than on the accidental influences of their everyday environment. Secondary deposits happen as a sequence of preëxisting stone, and also as a consequent complication of pyelitis, cancer, and other structural diseases of the kidney. It follows, therefore, that the history of the symptoms of stone in the kidney will be modified somewhat by the morbid state of the kidney at the time of the stone's inception; that is to say, the symptoms referable only to stone will precede, rather than follow the symptoms characteristic of the diseases of the kidney associated with stone development. The existence of stone in the kidney is often exceedingly difficult to diagnosticate, as the following examples will show:

A stone may develop, pass from the kidney to the bladder, and escape through the urethra without causing any disagreeable manifestations; provided, of course, that it be small as compared with the channels through which it passes. A stone of large size may be found in the kidney after death, without it having caused symp-

toms even suggestive of its preëxistence. And, too, the difficulty of diagnosis is emphasized in no uncertain manner by the fact that it not unfrequently happens that operative procedures fail to disclose the presence of stone in the kidney, even when convincing symptoms point with seeming certainty to its existence there.

It is an established fact that the symptoms of stone in the kidney depend much more on the size, situation, roughness, and mobility of the stone for their presence and prominence than on the fact of the mere existence of this unwelcome tenant in the kidney. The presence of a smooth or immovable stone, irrespective of its size, is less pronounced than that of a small, movable rough one. A rough or movable stone, irrespective of size, commonly asserts its presence by causing pain and pronounced modifications in the character and flow of the urine. A small, rough stone, immovably fixed in the kidney structure, may cause persistent and annoying direct and reflex pains, even though the concretion be so small as to escape the best directed methods of manual and operative technique. A movable or immovable stone, with pronounced asperities, located in the central cavity of the kidney, will cause much severe general and reflex pain, and will also quickly cause changes in the appearance of the urine, dependent on the presence of pus, muco-pus, blood, etc. Small movable stones, whether smooth or rough, will frequently block the flow of urine from the kidney. If small enough, they pass from the kidney sinus with much pain and difficulty through the ureter into the bladder; if too large to thus pass, they either block the ureter temporarily or permanently, or they return to the kidney sinus.

The suggestive symptoms of stone in the kidney, together with the convincing ones, constitute a rational order of arrangement which, it seems to me, will lead most surely to a correct diagnosis. A "suggestive" symptom of stone in the kidney may be defined to be a symptom the presence of which leads the physician to *suggest* the possible existence of stone; a "convincing" symptom of the same condition causes him to assert its probable existence, and to advise some surgical procedure to establish its actual existence.

When the solid constituents which are usually found in solution in the urine become excessive, and for this reason are deposited in a crystalline form, and thus pass from the body, we are then in a presence suggestive of the possibility of stone formation, especially if at the same time there be found tangible evidence of pus, muco-

pus, blood, or other plastic elements in the same specimen. The more decided and continuous these manifestations are, the more significant they become, and soon attacks of renal pain, varying in intensity and character, signal the occurrence of a tangible union of the organic with the inorganic constituents for the formation of stone in the kidney of greater or less size. Aching lumbar pain, vesical irritability, wandering pains in the loins, urethra, upper part of the thigh, and of the testicle; retraction, attended with hyperæsthesia of the latter, each of these suggest the existence of stone in the kidney, especially if associated with the general evidences of chronic indigestion, nervous prostration, or those of a lithæmic state.

Now, indeed, with such a history, we are well-nigh convinced of the probable existence of stone in the kidney. However, the chain of suggestive evidence thus forged may melt away, with or without treatment, leaving us free to expect final cure, or to dread the existence of an ambushed foe.

Whether a stone has formed at all, or whether it continue to increase in size, depends on the mutual affinity of the saline and colloid constituents of the urine for each other. Unfortunately, however, for the prospects of arrest of development or of cure at this time, many of the suggestive symptoms already mentioned imply changes in the kidney structure which are themselves conducive to stone formation. True it is that inorganic elements of the urine may be present in an excessive amount indefinitely, and yet be unattended with stone formation. It is true, likewise, that the organic elements may exist in similar proportions, with no unfavorable result; moreover, it is strangely true that both of these may be present coincidently in the urine in large amounts and still no union ensues, until finally, for some unknown reason, their hasty and firm incorporation with each other lays the foundation for stone in the kidney. The step from the "suggestive" to the "convincing" symptoms of stone in the kidney is scarcely appreciable; it glides from the first to the second class as one passes from youth to manhood—imperceptibly. Exaggeration of the suggestive symptoms with their addenda comprise the convincing ones. Renal colic with its symptomatic phenomena may now be frequent, prolonged, and severe; lumbar pain, markedly increased by jolting movements of the body, and perhaps by turning in bed, is more or less constant; the presence of pus and blood in the urine, and the

increase or appearance of the latter with unusual body movements is very common indeed. Renal epithelium, with or without blood-casts, is frequently found; deep pressure at the seat of the kidney causes pain and tenderness, and perhaps discloses the presence of kidney enlargement; the fecal pressure of constipation and fecal movements along the contiguous colon cause pain of a hyper-sensitive or distended kidney. Finally, vesical lavage and the use of the cystoscope will establish the fact that the abnormal urinary products are foreign to the bladder, and perhaps they may be seen to enter that viscus through the ureters themselves. Stone may be present in one kidney alone or in both at the same time; the latter is the more frequent condition. It should not be forgotten that the presence of stone in one kidney may occasion reflex pain in its healthy associate, thus causing the surgeon to suspect that both organs be diseased, or perhaps the latter alone. There are other symptoms of a more or less isolated character that are attributable to stone in the kidney, but, unless they are supported by the presence of one or more of the convincing symptoms already mentioned, they can rarely be given the weight to warrant active surgical interference. The symptomatic picture already drawn is essentially practical, being sufficiently comprehensive, as it seems to me, for the purposes of this reading. The indications for operative surgical treatment are quite clearly implied by the forcible deductions that can be drawn, after consideration of the "convincing" symptoms of stone in the kidney already stated:

1. Operative explorative treatment should be advised when the group of "suggestive" symptoms are persistent and annoying, and one not mitigated by simpler methods of treatment.

2. Operative surgical treatment should be urged promptly when the group of "convincing" symptoms indicate pathological kidney changes of irreparable nature, especially if the use of simpler means of cure be attended by no improvement.

II. Discussion on the Surgical Management of Genito-urinary Calculus.

B. Stone in the Kidney. The Surgical Treatment.

By LEWIS A. STIMSON, M.D.,
NEW YORK.

The operative treatment of stone in the kidney is so recent an addition to the duties and resources of the surgeon that the experience necessary fully to determine the relative merits of various details and procedures, and even perhaps of the fundamental methods of operation, has not yet been accumulated. Moreover, the complexity of the subject, created by the widely varying pathological conditions, is correspondingly great, and as the limitations of time imposed by the crowded condition of the order of exercises must be respected, it has seemed to me that the obligations of the duty that has been allotted to me could best be met by (1) a rapid review of the indications for treatment in the different conditions of the kidney, and (2) by a detailed description of the methods and procedures by which such indications are to be carried out, grouping them and comparing them from the operative, instead of the pathological, standpoint.

Stone may exist in the comparatively healthy kidney in the form of gravel, or of one or more masses too large to be passed through the ureter, or imprisoned in a pouch of the cortex; or it may have been present as a well-defined stone for a sufficient length of time to have induced suppuration of the pelvis and of the substance of the kidney; or it may be present as an incident, an epiphenomenon, in the course of a pyelo-nephritis.

In the first case, that of a healthy kidney with stone present as gravel or in large masses, the indication is to remove the stone either through the natural passages, if that is possible, or by nephrotomy, including in this term incision of the pelvis and incision of the substance of the kidney. Possibly this statement of an alternative is not warranted; it may be that there is no operative means to promote the evacuation of gravel or small stones through

the ureter. I have made the statement on the strength of a single case reported by Le Dentu, in which, after recognizing the presence of gravel by acupuncture, and failing to reach it by incision of the substance of the kidney, he noted the escape through the urethra of several concretions and the complete cessation of the previous severe lumbar pain. It may well be that this was a coincidence, in that the relief was such as has been obtained in a number of cases of nephralgia simulating calculus, by simple exposure of the kidney with or without exploratory puncture or division of its capsule.

In the second class of cases, those in which more or less extensive suppuration has been set up by the presence of the stone, the indications are more complex. The stone should be removed—that is clear; but is that all, or shall the kidney also be removed? Shall it be a nephrotomy or a nephrectomy? The answer to this question must be found in the degree of disorganization of the kidney. If there is simply a pyelitis, the removal of the stone alone is indicated; for, with the removal of the cause, the cure of the suppurative process may be expected. If the substance of the kidney has become involved, if several non-communicating abscesses have formed in it, doubt will be felt whether drainage sufficient to permit the cure of the abscesses can be established, or whether enough of the gland-tissue remains to make it worth while to preserve the organ. The importance of preserving any portion of the gland that may still be functionally competent is so great, in view of the possible future disability of its fellow, that the rule of practice should be, I think, to retain the kidney in the absence of a clear affirmative reason for its removal. Experience has already made it clear that a secondary nephrectomy, that is, one following a nephrotomy, after an interval of a few weeks or months, is quite as easily executed as a primary nephrectomy, and has a much lower rate of mortality. The greater ease of removal is explained by the reduction in the size of the kidney effected by the nephrotomy and drainage; the lower rate of mortality may, perhaps, be dependent upon the same cause, or it may be an associated result of undetermined conditions, which led to the execution of a secondary instead of a primary nephrectomy.

In the third class of cases, those in which the stone or stones have formed in consequence of a preëxisting pyelo-nephritis, their presence can affect the choice of operation only in case the main affection should call for a nephrotomy, and not for a nephrectomy. The removal of the stone would then be required in addition, and

possibly such removal would be so difficult, or necessarily so incomplete, that the removal of the entire organ could alone meet the indication.

To summarize it, then, the presence of a stone in a kidney calls for either a nephrotomy or a nephrectomy; and we have next to examine the details of those two operations.

The kidney can be explored, incised, or removed through the peritoneal cavity (the transperitoneal method) or through the loin (the extra-peritoneal method), or by a combination of the two.

It is so generally admitted that the extra-peritoneal method is to be preferred as the safer, and the field of the transperitoneal method is so steadily becoming more and more restricted to a few non-calculous affections, that I shall say nothing about the latter, except that the incision into the cavity is best made along the outer border of the rectus abdominis, and the second incision of the peritoneum made on the outer side of the colon, so as not to injure the vessels supplying it. Of the method which combines the two incisions I shall only say that it has been successfully employed in several cases by Thornton; he explores the kidney through the peritoneal cavity, determines the presence of a stone by touch, and then, while fixing the kidney with a hand in the abdomen, cuts down upon it through the loin by a small incision, carries a knife through the kidney-tissue to the stone, and extracts the latter with forceps. It is quite possible that the anterior peritoneal incision, in competent hands, adds but little to the risk of the operation, and that the objections to it which so promptly suggest themselves are not fundamental or important; but still it appears that the method would be efficient only in cases of a single small stone in a comparatively healthy kidney, and that it would probably be inferior to the posterior operation, both as an aid to diagnosis and as a therapeutic measure, when multiple stones or abscesses were present, or when the stone was large and irregular.

The posterior route, then, is the one to be preferred, and the operation will be wholly extra-peritoneal, except in certain cases.

The incision. This may be longitudinal, along the border of the sacro-lumbalis, or transverse between the rib and the ilium, or a combination of the two. If the former is used, the patient should be placed in a position that is inclined 30 to 40 degrees from the prone toward the opposite lateral, and the trunk should be laterally flexed so as to increase the space between the twelfth rib and the

crest of the ilium on the side of the operation. If the transverse incision is used, the inclination toward the opposite lateral position may advantageously be greater.

The *longitudinal incision* is made along the outer border of the sacro-lumbalis mass, which can be readily recognized by the finger, about two and a half to three inches from the median line, and should extend through the skin from the level of the eleventh rib to that of the border of the ilium. It is deepened, layer by layer, until the strong middle layer of the lumbar fascia, or aponeurosis of the transversalis, is reached, after dividing which the posterior surface of the quadratus lumborum is exposed. The outer border of this muscle is cleared and drawn toward the spine, and then the fat enveloping the kidney can often be seen through the thin anterior layer of the lumbar fascia moving up and down with the acts of respiration. Space can be advantageously gained by dividing the outer portion of the quadratus close to its attachment to the ilium. On division of the thin intervening fascia the fatty capsule of the kidney is reached, and by tearing through it and stripping it toward the sides the posterior surface of the middle and lower portions of the kidney and its pelvis is exposed to sight and touch.

Except in persons who are very fat, a condition not often associated with calculous affections of the kidney, this incision gives ample room for exploration and nephrotomy, and even for nephrectomy when the kidney is not very much enlarged. It has the advantages of not weakening the abdominal wall and thereby predisposing to hernia, and of not carrying much risk of opening the peritoneal cavity. On the other hand, the irregular relations of the pleura and the absence or incomplete development of the twelfth rib in a certain proportion of cases expose to accidental wounding of the pleura, a complication that has occurred and has proved fatal. Holl found the twelfth rib absent in three of sixty cadavers examined—five per cent.—a proportion so unexpectedly large that it is now deemed an important precaution to count the ribs before beginning the operation.

A portion of the twelfth rib, and even of the eleventh, has been resected in a few cases in order to gain more room upward, a procedure which, of course, involves additional risk of wounding the pleura. Some room can be more safely gained by drawing the rib forcibly upward with a blunt hook.

The *transverse incision* is begun just within the outer margin of

the sacro-lumbalis, a little below the twelfth rib, and carried outward parallel to the rib for about four inches. The muscular and aponeurotic layers are successively divided, after recognition, until the retroperitoneal layer is reached, and the kidney exposed by division of its fatty envelope, as in the preceding description. Additional space can be gained by a short longitudinal cut at the inner end of the main incision.

The especial advantages of this incision appear in nephrectomy, when the kidney is much enlarged. When the exceptional indication for resort to it arises from the great size of the kidney, or from its close inflammatory attachment to the peritoneum, this incision permits an easy and free opening into the peritoneal cavity, through which the hand can be introduced to draw the kidney outward, and to facilitate the securing of the pedicle and other later steps of the operation.

The incision of the kidney. Nephrotomy; Nephrolithotomy. —The kidney having been reached, and its posterior surface and pelvis having been freed as far upward as possible from its fatty capsule, the surgeon proceeds to seek for signs of the presence and location of a calculus. He may be able to recognize it by touch, grasping the kidney between the thumb and finger; or its position under the thinned cortex may be indicated by a rounded bulging of the surface and a deepening of the color; or the stone may be touched with the point of a needle introduced through the parenchyma or the wall of the pelvis. This latter mode of exploration has been proved to be free from serious risk, and when employed should be made systematically so as to explore all accessible portions of the kidney, the needle being introduced at intervals of about half an inch.

The incision for the removal of a stone has usually been made through the posterior wall of the pelvis, and it has been made with the knife rather than with the cautery; but some recent experience has shown that an incision through the substance of the organ into the pelvis has some advantages and does not expose to troublesome hemorrhage. Such pressure as can be readily made by sutures checks the bleeding, and it is believed that a urinary fistula is then less likely to be established than after incision of the pelvis. If the stone lies under a changed and projecting portion of the cortex, it should be reached by an incision through the cortex radiating from the pelvis to the convex border.

If the stone is small and free in the pelvis or a dilated calyx, or in a pouch formed about it in the cortex, its removal is easy; it may be picked out with the fingers or forceps; but if it is large, irregular, or adherent, its removal may be very difficult; it may be necessary to break it into pieces, to divide intervening septa, or to open into separate, adjoining pouches. For the division of septa strong scissors are probably better than the knife or the cautery. To break a large irregular stone, a lithotrite or strong sequestrum forceps may be used. To remove stone from cavities with irregular approaches, scoops of most varied and bizarre shapes have been designed, few of which have received the approval of others than the inventors, and all of which might still leave the surgeon unprovided with the particular shape that was needed for the case in hand. In a number of the reported cases the surgeon has expressed the opinion, or the autopsy has shown, that stones have been left undiscovered or unremoved.

Occasionally the stone has proved to be so large, or the stones have been so numerous and so difficult of removal, that it has seemed wiser to remove the entire organ, to do a nephrectomy instead of a nephrolithotomy.

The orifice of the ureter should next be sought, and that canal explored to determine whether it is free or whether plugged by a stone or a mass of fibrin. If such an obstruction is found, it may, perhaps, be pressed downward into the bladder, or washed out, as was very ingeniously done by Dr. Lange, by a stream of water directed into the distended ureter through the wound.

The stone or stones having been removed, the incision in the pelvis or in the substance of the kidney may be closed with sutures to hasten its repair and diminish the chance of the establishment of a urinary fistula.

Provision for the drainage of the wound and the prompt removal of urine that may escape into it is made by a rubber drain and iodoform packing; the external wound is partly closed by sutures at its ends, and a large absorbent dressing applied.

Nephrectomy. The details of the enucleation and removal of the kidney vary greatly in different cases, according to the varying conditions of the organ. If inflammation and suppuration have not caused the fusion of the fatty capsule and the cortex into a single lardaceous layer, or united the kidney closely to the peritoneum or colon, it is comparatively easy, after having reached the

posterior surface of the kidney, to work the fingers around its convex border and its two extremities and separate it from all its attachments except the sort of pedicle constituted by the renal vessels and the ureter. This pedicle may be ligated in sections, the ligatures being passed by means of a large full-curved aneurism or pedicle needle, or occasionally the artery can be isolated by sight or touch, and tied separately, or the entire pedicle can be tied *en masse*. If the latter course is followed, I think the elastic ligature should be used. In some cases, instead of a ligature, a long, strong clamp has been placed on the pedicle. In making such an enucleation, the operator must proceed with great gentleness, especially at the extremities, where abnormal vessels may be encountered, and he must not draw the kidney too forcibly into the wound lest he tear the vessels.

If the kidney is much altered and adherent, the need of care in detaching it is still greater. The accidents that have happened are varied and serious: laceration of the peritoneum, colon, and even in several cases of the vena cava with immediately fatal result. When the adhesion of the anterior surface of the kidney to adjoining tissues has been very close, it has been successfully practised to remove the posterior half of the organ, and then to scrape away from the remaining cut surface so much as it seemed safe to remove. The healing of the wound may require a somewhat longer time, but that is not an excessive price to pay for the greater security.

If the ureter has been separately divided, it is well to close it with a ligature.

The pouch left by the removal of the kidney needs to be drained, packed with iodoform gauze, and protected by a large dressing outside.

It may be well to add that some surgeons, impressed by the desirability of preliminary ligature of the renal artery, have employed and recommended extra-peritoneal approach to the kidney by a longitudinal incision in, or somewhat in front of, the axillary line; when the peritoneum is reached, it is stripped back to the kidney, and then off its anterior surface until the renal artery is exposed and tied. Enucleation is then completed as in the previous case.

III. Discussion on the Surgical Management of Genito-urinary Calculus.

C. Stone in the Ureter.

By A. T. CABOT, M.D.,
Boston, Mass.

The stones which lodge in the ureter and lead to trouble there have their origin in the calyces and pelvis of the kidney, and are carried down with the stream of the urine. A stone never forms in the ureter, except it have a foreign body for a nucleus. Renal calculi of small size and smooth surface almost invariably find their way down into the bladder.

Occasionally, however, when of large size, or owing to the prickly irregularity of their surface, they lodge in the canal and remain fixed for a longer or shorter time. Even a comparatively small stone, if of angular shape, may become thus fixed. Not only do the sharp projections catch in the mucous membrane and thus prevent its progression, but by their irritation they may, as M. Le Dentu suspects, excite the ureter to contraction which holds them fixed.

It is also probably true that their irregular shape prevents their so closely stopping the ureter that the urine collects behind them. This would render inoperative one of the more efficient agencies by which their progress downward is effected. For it is the gradually accumulating pressure of the retained urine that forces the stone along the canal, and if the urine constantly leaks past the stone, the accumulation behind it is impossible.

Although a calculus may be arrested at any part of the canal, there are certain points where this arrest is more likely to take place. First, at the entrance of the pelvis into the ureter there is a narrow place, and a calculus too large to enter is likely to become impacted at this point.

Also, about two inches below the pelvis of the kidney there is a narrow point at which calculi are apt to be arrested. The writer has met with one instance of this sort.

Further down, just below the brim of the pelvis, the ureter is apt to be a little narrower, and here, too, calculi stop and become impacted.

Lastly, as the ureter perforates the bladder wall, it penetrates first the muscular coat; then running for from one-half to three-quarters of an inch between that and the mucous membrane, it finally opens through the mucous membrane on a little nipple-like projection into the cavity of the bladder. Just in this portion of the canal calculi very frequently become fixed. Numerous instances are reported in which they have been removed from this point. Emmet reports several such.

Occasionally the ureter contains more than one stone; for as it is not unusual to see several calculi in the kidney, it will occasionally happen that one stone, working its way down and dilating the ureter, prepares a way which others easily follow.

It also sometimes happens in calculous patients that both ureters will contain stones at the same time.

When a calculus becomes fixed in the ureter, it produces effects both general and local. Its general effects are brought about both by its mechanical obstruction to the flow of urine, and also apparently in some cases by reflex irritation. Thus, it has happened that a calculus lodged in one ureter has led to the complete suppression of urine, owing to the inhibitory effect produced upon the other kidney.

If the kidney whose ureter is stopped up has a partial outlet to the urine, either intermittently or constantly by the leakage past the stone, its function is usually not destroyed, although much interfered with. In such a case an inflammatory process may establish itself in the kidney, and this may either take the form of a pyelitis and lead to a pyo-nephrosis, with perhaps a pyelo-nephritis, or the kidney substance may be mainly affected, and we then have a parenchymatous or interstitial inflammation.

When, however, the stone produces a complete stoppage, we have an effect much like that which follows the ligature of the ureter, and with more or less formation of a hydro-nephrosis, the secreting portion of the organ is gradually destroyed. The writer has met with one such case, in which a kidney, which had been subject to attacks of renal colic from the passage of stones for many years, had its ureter finally completely blocked up by a large calculus, and in consequence entirely lost its secreting power, so that when the

stone was removed, urine no longer came from that side. Usually, under these circumstances, the remaining kidney becomes hypertrophied and performs the functions of both. It is a not uncommon occurrence, however, that in the existence of a calculous diathesis, we finally have the ureter of the remaining kidney also suddenly blocked, and complete suppression result.

The pain which a stone causes is also to be taken into account among its serious general effects. This is sometimes so severe and prolonged as to gradually wear the patient out with nervous exhaustion and loss of sleep. Under these circumstances a long-delayed operation will have less chance of success than one undertaken while the patient's forces are well preserved.

Besides these general changes which lead to a partial disabling of the urinary excretory organs, a stone lodged in the ureter produces also serious local lesions which may gravely affect life.

When a stone becomes thus fixed, the first effect is a stretching of the ureteral walls, making them thinner; and if at any time the irritation of the stone sets up an inflammation, they may be perforated, and the escape of urine, and even of the stone, into the surrounding parts may lead to the formation of an abscess.

If, however, the pressure and irritation of the stone do not lead to perforation, the walls of the ureter gradually become thickened by the formation of fibrous tissue in and around them. At the same time the ureter behind is subjected to an increase of pressure proportionate to the degree of completeness with which the calculus stops the flow of urine. The canal is dilated, and if this condition of things persists, the walls gradually become thickened. Especially is this the case when a suppurative inflammation of them is set up.

Not uncommonly a stone, after lodging for a time, moves on before the accumulated pressure behind it, and again lodging, sets up the inflammatory changes of the wall at this new place. Thus, a ureter through which many calculi have passed may be much dilated and thickened through its whole extent, with here and there points of comparative narrowing where more active irritation has set up a peri-ureteritis and consequent stricture.

The diagnosis of a stone in the ureter is not always an easy one to make, for while usually the pain of renal colic is very characteristic, it sometimes lacks salient features, and is not easily recognized. Moreover, when the pain is caused by an obstruction in the ureter,

it is even then not always easy to determine whether the cause is a calculus; for clots of blood or mucus within the canal, the pressure of growths from without, or the existence of a stricture in its walls, may give rise to an almost similar train of symptoms, and the differential diagnosis can only be made by a painstaking study of each case, and is then not always possible.

For purposes of treatment it is also important, after the presence of a calculus is assured, to make out, if possible, the exact seat of the concretion.

Unfortunately, the greater part of the ureter lies so deeply that it cannot be easily explored by the touch. The lower part of the canal can be reached through the vagina in woman, and by the rectum in the male, although even this is impossible in the case of a fat man with a thick perineum. Palpation through the vagina is not difficult, and the stone can be recognized in the last two or three inches of the ureter. The portion of the male ureter that can be reached through the rectum is much less considerable than this—probably not often more than the last three-quarters of an inch that lies in the bladder-wall being accessible. Palpation through the abdomen may be successful in a thin subject, especially if the stone be a large one. In a fat patient, or with a small stone, this search would probably be fruitless.

In case the stone has so blocked the ureter that a hydro- or pyonephrosis has formed behind it, the upper dilated portion of the ureter may sometimes be felt, and the site of the stone would naturally be at the lowermost point of this swelling.

Even when nothing can be felt by the examiner, the probable seat of the stone may sometimes be determined by the patient's sensations to palpation. A constant tender spot at one part of the canal is always suggestive of the seat of the stone. The pain at such a point is usually of a pricking character, and is especially to be elicited by a sharp push of the fingers. When a stone is lodged in the upper part of the ureter, the tender point may be sought in the lumbar region, and the writer has succeeded in removing a stone from this portion of the canal, which was located by just such a point of tenderness. When the indications do not point with sufficient clearness to any one spot, and the condition of things is so serious that some interference is demanded, the position of the stone may be sought by an abdominal incision.

With the hand in the abdomen, the whole course of the ureter

can be easily palpated and a stone readily discovered. Within two years it has happened to two operators[1] to successfully locate a stone in this manner, and in each case to remove it with success.

Before proceeding to the consideration of serious operative measures for the relief of a stone in the ureter, it may be well to consider the history of these cases somewhat carefully, and to endeavor to lay down some rules by which we shall be decided when to operate and when to let the case alone, and leave it to the efforts of Nature for a cure.

When we have a condition of high fever, with other indications of the formation of an abscess around the calculus, our duty is clear to open the abscess and remove the irritating cause. Also, when the obstruction has led evidently to a pyo-nephrosis, with a gradual loss of the patient's strength and flesh, the indications for the surgeon are again clear.

In some chronic cases it happens that the long residence of the stone in the ureter seems to give rise to but little trouble, the urine filtering by it, owing to some conformation of its surface, which prevents its entirely closing the canal. Here, again, the manner in which the excretion of the urine is carried on must, to a great extent, be our guide in determining whether it is important to interfere or not.

The patient's general condition, also, is to be taken into account, and a progressive loss of flesh and strength are clearly indications of the necessity for an attempt to improve the condition of things by operation.

If, in an acute case, the amount of urine becomes dangerously small, and especially if the presence of albumin and casts in that which is passed indicates a serious complication of the kidneys, an operation should be undertaken at once.

It should be remembered that if one kidney contains stones, it is not impossible that the other does also, and that the added work is being borne by an organ already partly disabled. The serious impairment of a kidney whose ureter is blocked, and the possible permanent deterioration of it, should not be lost sight of, and full weight should be given to these considerations in deciding for or against operation.

If an enlargement of the kidney and of the ureter above the seat

[1] Hall: Philadelphia Medical Record, October 18, 1890. Lane: London Lancet, November 8, 1890.

of the calculns can be made out, it is to be inferred that the stoppage is quite complete and that the kidney is sure to suffer. If, on the other hand, the urine finds its way past the calculus, an examination of it will tell us whether the kidney is undergoing injury.

In deciding now upon the best method of operation, we have before us an anatomical problem, which is: How can the ureter be reached and opened in the different parts of its course without injury to the peritoneum? This seems to be one of the cases in which it is unwise to conduct the operation through the abdominal cavity; for although the canal can be easily reached and examined through the abdomen, and removal of the stone in this manner would be a comparatively simple matter, yet the condition left of an intra-peritoneal wound of the ureter is so dangerous that surgeons have, for the most part, avoided it, and have sought to reach the canal extra-peritoneally. The opening of the abdomen for the purpose of locating the stone, and thus guiding the extra-peritoneal incision, is quite a different matter and is of undoubted value.

By what incisions, then, can we best reach the ureter extra-peritoneally?

If the stone is lodged in the abdominal portion of the ureter, it may be reached by an incision on the line mapped out by Israel, which starts at a point on the anterior edge of the sacro-lumbar mass of muscles, a finger's-breadth below the twelfth rib, is carried parallel to the rib as far as its tip, then turns down toward the middle of Poupart's ligament till the line of usual incision for tying the iliac artery is reached, then again turns toward the middle line, and ends on the external border of the rectus muscle. According to the seat of the calculus, the incision will be made on the posterior, middle, or anterior third of this line.

The dissection should be carried down quickly to the peritoneum, audthis membrane should be separated from the parts beneath, the finger pushing readily in behind it. It should be remembered that the ureter adheres to the peritoneum, and is lifted up with it. If there is difficulty in distinguishing it, the peritoneum may be stripped up to the point where it becomes adherent to the spine, and the ureter will be found just outside of this.

On the left side it lies about one-half an inch from the spine, while on the right side it is somewhat more distant from it, being separated by the vena cava. On this side it lies in close contact

with the vein, and care should be taken in searching for it on this account. If a stone is impacted in the ureter, it can usually be found by palpation through the wound, and this simplifies the search for the canal. The ureter in the upper part of the pelvis may be reached by an incision along the lower end of Israel's line, and in a child or a thin person it might be accessible in this manner, even to a point behind the bladder. Practically, however, in adults of ordinary development, the lower three or four inches of the canal cannot be reached through an extra-peritoneal incision in front.

In one case[1] in which an incision had been made into the peritoneal cavity for the purpose of diagnosis, where a stone had been found in the pelvic part of the ureter, it was found possible, with the hand within the abdomen, to lift the stone toward the crest of the ilium, where it could be reached by the extra-peritoneal incision. This case suggests, and it seems probable, that the combined incisions might safely be used in some of those cases where the calculus is below the point where it can be reached from in front, and it would even seem to be possible in a favorable case to work the calculus along the ureter, by manipulation within the abdomen, to a point where it can be reached by an extra-peritoneal opening.

When we come to the last two or three inches of the ureter, however, we reach a region which cannot be operated upon through the anterior incision. This lower end of the canal, too, is a point where the calculi are very apt to become impacted. Occasionally they even project into the bladder, and in such a case they may sometimes be reached and removed through the bladder. There is always danger, however, if the bladder-wall is incised, that urinary infiltration will take place, and it is better, even in this part of the canal, to reach the calculus without opening the vesical cavity, if possible.

In the female this last two or three inches of the ureter runs for the most part within the broad ligament, and calculi in this region can be reached by an incision through the vault of the vagina. If the calculus is readily felt near the cervix uteri, and the incision is carried outward from the cervix toward the side of the pelvis, there is little danger of opening the peritoneal cavity, and the incision can be readily carried down to the stone. If it lies too deeply, the parts may be separated with the finger until the stone lying in the ureter is reached.

[1] Lane: Loc. cit.

In one such case the writer removed a stone from this region weighing 190 grains. The difficult point in the operation was in dislodging the stone after it was fairly uncovered. This was finally accomplished by passing a blunt hook up over the calculus within the ureter, and by traction from this, at the same time pushing the tissues aside with the finger of the other hand, the calculus was finally dislodged and delivered.

In the male the removal of calculi from this region is much more difficult. It may, however, be accomplished by an incision over the sacrum, with the removal of part of that bone, after the manner practised by Kraske in cases of cancer of the rectum.

The incision for reaching the ureter in this way may be made over the margin of the sacrum on the side of the ureter which is sought; commencing on a level with the sacro-lumbar articulation, and ending just below the tip of the coccyx.

After dividing the sacro-iliac ligaments, the coccyx is removed and the lower portion of the sacrum on the side uncovered. This may be done readily with large gnawing forceps, and if the side of the bone is removed as high as the third foramen, a good opening and easy access to the interior of the pelvis is obtained. A sound introduced into the rectum now maps out its outline and serves to hold it to one side during the subsequent search.

The converging lines that the ureters pursue through the pelvis lie pretty closely over the lateral edges of the sacrum, and this relation will help somewhat in fixing their location when approaching them from behind. The normal collapsed ureter is, under the most favorable conditions, hard to find, and care is required to avoid wounding the peritoneum during the search for it.

In the cases we are considering, however, we have the stone to guide us to it, and when the calculus is found, an incision may be safely made over its lower surface, which is not covered by the peritoneum.

Lastly, how shall we treat the wound in the ureter after the removal of the calculus?

In one case it was closed with a continuous silk suture with success. In other cases this has not succeeded, and considering the possibility that a suture may serve as a nucleus for future calcareous deposit, this plan would seem to be not without danger.

On the other hand, in several cases the wound in the ureter has healed quickly, without trouble, when left to itself. It would seem,

therefore, best not to suture the canal, but to provide adequate drainage for the urine escaping from it until the wound in its wall closes.

The only exception to this is when the ureter is opened through the vagina in its lowermost part, where it is in intimate relation to the vaginal wall, and where it is possible to get sufficient thickness of tissue for the application of stitches without encroaching on the cavity of the tube.

IV. Discussion on the Surgical Management of Genito-urinary Calculus.

D. Stone in the Bladder. What Special Indications should Govern a Choice of Operation as between Lithotomy and Lithotrity.

By EDWARD L. KEYES, M.D.,
NEW YORK.

In the few minutes allowed me for a consideration of this subject, I shall shape my decision chiefly upon deductions justified by the application of improved modern methods of diagnosis, and upon the crystallization of such experience as it has been my fortune to gather during twenty-five years of active work in the genito-urinary field. Facts are eternal, and the premises from which conclusions must be drawn are not changed from what they have always been, but our appreciation of the significance of facts varies. Old conclusions must now be modified by the light thrown from the three brilliant modern foci:

I. The admirable results of litholapaxy as applied to male children.

II. The undoubted triumphs of cystoscopy in perfecting diagnosis, more particularly as to the physical condition of the urinary tract.

III. The accumulating confidence of those who are testing the value of supra-pubic prostatectomy as a radical measure for the relief of the enlarged prostate.

These three considerations are the only ones I recognize as power-

ful in modifying our choice of operation from what it would have been five, or even three, years ago.

This is the day of attempts at exact physical diagnosis. Time was, but is no longer, when a reputable surgeon may presume to advocate any one operation as applicable to all cases of stone. The same common-sense and logical weighing of his patient's necessities must shape a decision in selecting the operation in this as in any and every other surgical field.

To approach the subject, then, from its most material side, I ask: Is the size of the stone now a prime factor in deciding the method by which its removal should be undertaken? At the present day and date the answer must be decidedly, No.

Of course, small stones are easier to dispose of than large ones by the lithotrite, and it seems natural that they should receive this method, larger ones being left to the knife. Yet this is so only in a negative sense—namely, a large stone, if large enough to be mechanically beyond the clasp or the strength of the lithotrite, cannot be managed by this instrument; but aside from this the size of the stone is a matter of no significance at all.

In a sort of negative sense even the paradox may be sustained, that the smaller the stone the less is it suited for the lithotrite in any but very expert hands. For one of the slurs cast upon lithotrity by its enemies is that it often leaves behind a last fragment to become the nucleus of a new stone. Yet if this last fragment, as is the fact, be so hard to find, even by a competent lithotritist, how much more difficult must be the finding of a very small stone, than of a good-sized one, by a surgeon inexpert in the use of the crushing instrument—for surely there can be no doubt as to the relative skill required to perform creditable lithotrity as compared with creditable lithotomy.

I demonstrated this in a statistical paper, discussing the value of the then new operation, litholapaxy, many years ago,[1] wherein it appeared that the percentage of mortality diminished rapidly as the number of operations by a given surgeon multiplied. At that date the death-rate was 2½ per cent. for surgeons having performed five or more than five operations, while it was 13 per cent. for surgeons having performed less than five operations each.

Any competent surgeon who can handle his knife well in general

[1] American Journal of the Medical Sciences, April, 1880.

work can perform lithotomy perfectly, but he cannot perform lithotrity well until he has trained his hand by actual experience in a number of cases. For this reason alone lithotomy is, has been, and justly must always continue to be the more popular operation with the general body of operating surgeons; but beyond this there are also other considerations in modern days throwing the balance in favor of lithotomy.

For, notwithstanding that the statistics of lithotrity (or litholapaxy, for this is modern lithotrity) are splendid in competent hands, and that in such hands, if the stone can be crushed, it may generally be safely crushed, yet even in such hands the whole question ought to be—not, Does the stone justify crushing? but, Does the physical condition of the patient and of his urinary tract justify lithotrity? And this view of the matter should, I think, obtain all through life. The age of the patient has nothing to do with it, and the stone nothing—except in lending itself mechanically to the possibility of lithotrity.

The very exceptionally brilliant results obtained in India by Keegan and by P. J. Freyer, with a wonderfully minute mortality, and repeated with less brilliancy in other countries, show that the very young male infant, even with large calculus, is a most fitting subject for successful litholapaxy. If the stone in the infant or child be too large for such crushing instruments as will pass his urethra, it is also too large for proper extraction by the perineal route, and the supra-pubic operation is called for: otherwise, litholapaxy should always be the operation of choice. The male bladder, before puberty, with its dependent orifice and no prostate, needs no surgical drainage: take out the stone by crushing, and Nature does the rest.

I think it, therefore, safe to say: Before puberty, in either sex, always crush when practicable; for large stones, cut above the symphysis. It is far easier to crush successfully in the smooth bladder of the child than in any other.

In middle life some foreign bodies (glass, pins, pencils, etc.) naturally demand the knife, and the perineal route may be properly preferred, yielding as it does a less mortality than the supra-pubic, and being often as suitable for the detection and safe removal of the offending body. But aside from such adventitious nuclei, when the stone alone is considered, in the period between early adolescence and late middle age—say fifty—here assuredly, if the stone be very

large, the high operation is suitable, while, if it can be dealt with by the lithotrite, it should be crushed and washed out, unless the physical condition of the parts contra-indicates this method.

These physical contra-indications are few, being notably—tight, deep urethral stricture; intense, long-standing cystitis with altered mucous membrane (needing prolonged rest and drainage); sacculated stone, or concomitant vesical tumor. Of these conditions, two—urethral stricture and chronic cystitis—call for the perineal operation, the first median with liberating lateral vesical incision if required; the second lateral, the bladder neck being well cut into to insure prolonged free drainage; while the sacculated stone and concomitant vesical tumor naturally demand the supra-pubic opening. Here it is that the cystoscope lends powerful aid in deciding what course shall be followed.

I do not consider the existence of pyelitis momentous in deciding whether to cut or crush. It aggravates the prognosis in either case. If the stone be too large for crushing, here, as in the child and for the same reason, the supra-pubic route should be elected.

Finally, we come to the old man, and it is here, in my opinion, that modern experience instructs us to reverse some of our earlier conclusions. Formerly it was exactly in these cases that lithotrity (or litholapaxy) was most ardently advocated, for it was contended that with the large prostate there was no hope of having a healthy bladder, even after cutting, therefore why take the risk of the knife? and if the patient was in catheter-life, why not employ the lithotrite, take away one of his sources of irritation, and let him keep on using his catheter?

Now, while this argument holds its force still, in the case of those old prostatics whose toughened urethræ make no protest against the frequent introduction of instruments, and who do not fret under this necessity for the mechanical performance of a natural function, yet there are a set of cases which I, at least, am learning each year to respect more and more—on account of an unhappy experience with some of them—cases in which the necessary mechanical disturbance attending litholapaxy so stirs up the vesical neck—whether every fragment be removed or not—that cystitis, more or less intense and prolonged, follows the operation, and both the patient and surgeon come to regret that the more radical cutting operation had not been decided upon at first.

In this class belong (1) prostatic cases that have not used a

catheter at all, or have not become habituated to the instrument; (2) most of the pallid, flabby, fat subjects, who show early the corneal arcus, and especially, it seems to me, (3) those who exhibit a tendency to recurring localized eczema (notably of the extremities) and to flatulent dyspepsia.

These cases, if properly prepared, do very well under lithotomy, and in them the supra-pubic method should be adopted, because it allows the surgeon to deal at a single sitting not only with the minor necessity—the small stone—but also with the more important and permanent disability—the enlarged prostate, by prolonging the supra-pubic lithotomy into a prostatectomy—and making the patient's necessity become the surgeon's opportunity.

V. Discussion on the Surgical Management of Genito-urinary Calculus.

E. On the Choice of Operation for the Removal of Stone from the Bladder.

By L. BOLTON BANGS, M.D.,
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Within the past few years the operation of supra-pubic lithotomy has become so popular in the minds of surgeons, and has met with such remarkable success, that for the present at least the question may be narrowed between it and some form of lithotrity.

The older methods of perineal lithotomy, median or lateral, seem to be almost entirely discarded excepting in the case of children. My own personal experience in this operation has been exclusively limited to children. Therefore, in stating my own views, I mean by the term lithotomy, supra-pubic lithotomy; all others being left out of consideration.

The perineal lithotrity of Dolbeau being extremely limited in its application, and not having gained much of a footing in this country, I shall speak of *lithotrity* only in two forms, one being the application of a crushing instrument to a small stone in an easily accessible bladder, the other form being that which is known by the term litholapaxy—namely, repeated crushings at one sitting, with as many

evacuative pumpings, until the entire stone is removed—the patient being under the influence of an anæsthetic.

The first of these is applicable to only a very limited number of cases; where, for instance, the stone is of recent formation, or where it has but recently descended from the kidney, and having been retained in the bladder, is exercising an irritation upon that viscus. In such cases one application of the instrument, either with or without an anæsthetic, will usually crush the stone thoroughly, and the few small fragments may either be removed by evacuating instruments at once or left to be expelled by Nature's way. The second form, or litholapaxy of Bigelow, being the one applicable to the vast majority of bladder calculi, I will venture to limit my share of the discussion to the indications for choosing between *it* and *supra-pubic lithotomy*. The object of an operation is not only to remove from the body the cause, or active agent of suffering, but to do it safely and quickly, without adding to the jeopardy of the patient; and also to place the patient in a state which shall conserve his future health and well-being. Hence, a given case must be approached without any prejudice in favor of one operation or another, and the conditions under which the operation is to be undertaken must govern very largely the choice.

The age of the patient, his or her vigor, the conditions of the kidneys, bladder, and prostate (if a male), must all be considered in turn. The relative mortality, also, of the two operations must be borne in mind. For, whereas at present we have a mortality in litholapaxy of less than 2 per cent., in supra-pubic cystotomy (for all purposes) it is, according to the latest statistics, in the neighborhood of 5 per cent. Furthermore, the liability to relapse after litholapaxy, especially in old men with atonic and catarrhal bladders associated with hypertrophied prostate, must also be taken into account.

In order to be more definite, and to make clear the reasoning upon which the choice of operation should be based, permit me to narrate briefly typical cases.

A man of about fifty years of age presents himself with the characteristic symptoms of stone in the bladder; namely, frequent and painful urination, with a varying amount of muco-pus, and occasionally blood in the urine, the latter feebly acid in reaction; pain in the bladder, increased by vigorous locomotion or by jolting.

Upon examination the bladder is found to be easily accessible to

instruments, and a stone of medium size is ascertained to be within it. His general condition is good, and there is no evidence in the urine of any serious condition of the kidneys. There is no evidence of any prostatic hypertrophy, nor is there from the history any evidence of prolonged catarrhal inflammation of the bladder. With such a typical case it seems to me that an unhesitating decision should be given in favor of the crushing operation or litholapaxy.

Again, a man with the following history: He is fifty-six years of age, has had for several years a history of urinary disorder, *i. e.*, frequent, painful, and bloody urination, the pain and frequency modified somewhat by intercurrent conditions of health, but of late his symptoms have been increasing in intensity to such a degree that he now seeks surgical aid.

On examination it is found that there is some difficulty in entering the searcher; that the depression of the handle of the latter, together with the presence in the bladder of two or three ounces of residual urine containing pus in moderate degree, indicates median hypertrophy of the prostate. Exploration of the bladder with the cystoscope, which can be readily done, shows that although the organ is trabeculated and has lost the glistening character of its mucous membrane, it is not sacculated or otherwise seriously affected organically, and that there is but one stone within it. Moreover, examination of the urine, which is of a specific gravity of 1020–1022, reveals only moderate evidence of disease of the kidneys: *i. e.*, besides a small percentage of albumin, an occasional granular cast. His general condition is excellent, and although he has been a sufferer from his bladder for several years, he has not yet had much impairment of his vigor. Under these conditions I would again advise the operation of litholapaxy.

Take another case, in order to illustrate more definitely my proposition. A man aged seventy-two. Although several years older than the preceding patient, his conditions are somewhat similar: *i. e.*, a moderate amount of prostatic hypertrophy, an uncomplicated bladder wall, and only a slight amount of evidence of degeneration of the kidneys. His bladder is easily reached by instruments, and is apparently accessible in all its parts. Moreover, there is but one stone present in the bladder, and it is of a little larger size than the medium. In such a case I would also recommend the operation of litholapaxy.

With these three cases of different ages may be contrasted a case

of a man aged only forty-five, in whom the following conditions are present: There is no hypertrophy of the prostate, but there is an exceedingly sensitive and hyperæmic urethra and an exceedingly sensitive bladder, compelling him to urinate at frequent intervals. Any instrument, no matter how gently introduced, is grasped by convulsive contractions of the bladder, and a stone is found at the first searching; but all subsequent searchings fail to reveal any. There is no evidence of disease of the kidneys, but there is evidence of marked catarrhal condition of the bladder, which, associated with this convulsive muscular contraction, makes it strongly evident that, besides the removal of the stone, physiological rest must be secured for the viscus.

In this case accordingly I did a supra-pubic cystotomy, and removed a stone which had been caught behind the pubes by this undue and irregular contraction of the bladder. Subsequent drainage, continued for a week or two, restored this individual to permanent health. In this case, although the age and general conditions of the individual pointed to the simpler operation of litholapaxy, yet the bladder conditions were such that I felt compelled to choose the operation of lithotomy. Here, then, may be seen some of the specific conditions which render the choice of operation difficult, but which was finally decided by the condition I have quoted.

Now, in further illustration of the indications for choice, take another type of cases: A man, aged sixty-two, who has had for several years pains over the pubes following each act of urination, pain felt at the head of the penis, reflex pains at different parts of his body, and whose sufferings have become excruciating. Although a temperate man, of good constitution, and of excellent clinical history, he is losing ground rapidly, and his vigor is being wasted by continual suffering. The introduction of a searcher into his bladder is attended with difficulty; not only a median but lateral hypertrophy of the prostate is found, and there are evidences in his urine of considerable degeneration of the kidneys.

In my opinion, although the lithotrite can be entered, the stone or stones seized and crushed, and the evacuating instrument entered also, it is better, in view of the prostatic obstruction and the condition of bladder and kidneys, to do the speedy operation of supra-pubic lithotomy. This will not only be less likely to do damage to his already inflamed and softened bladder, but will give him the advantage of drainage for the relief of that inflamed organ.

In such a case my choice would be determined by the gravity of the bladder condition; because, although the stone might be easily crushed and removed, there would be a strong liability to relapse, even if only a small fragment happened to be left behind. The cleaner and quicker the operation in such cases the better, and certainly in this respect the lithotomy is more desirable. I will admit that sometimes—although the symptoms of the patient seem to warrant the opinion that the bladder is uncomplicated, that but one or two stones of moderate size are present, and that all the indications point to litholapaxy—when we come to the operation itself, this may be found to be of greater gravity than we had supposed. It has been my own experience, in operating upon a patient, aged seventy-four, upon whom a year previously the operation of litholapaxy had been done by a competent surgeon, to find within the bladder three large fragments left there after the previous operation, and in addition to find, upon close inspection of the wall of the bladder, a diverticulum or cyst, in which was also a stone.

In another case, recently reported by me, I began with the operation of litholapaxy, but was obliged to convert it into a supra-pubic lithotomy, because a large fragment of stone jammed the prostate across the urethra, thus preventing the introduction of instruments.

In the one case I profited by the experience of a colleague, and in the other the cause of my misfortune was not cleared up until the bladder was opened. In each of these cases perhaps more careful antecedent exploration might have rendered the choice of operation more definite, and that choice would unquestionably have been the lithotomy.

The use of the cystoscope in such cases would in all probability have rendered the choice more definite. Therefore, it seems to me that if any uncertainty as to the character of the bladder, *i. e.*, whether its walls are cystic or not, or whether the prostate presents any difficulties, remains in the mind of the operator, and which cannot be cleared up by the cystoscope, the operation which not only permits the removal of the stone, but affords a means of inspection of the interior of the bladder, should be the one chosen.

Another factor in making a choice should not be overlooked, and this is the manipulative skill of the operator. Mr. Reginald Harrison, in comparing the supra-pubic and lateral operations, says: "There can be no doubt that the former proceeding will recommend

itself to many practitioners on the ground that it is the simpler of the two, and if for this reason it is the more efficiently executed, no better ground can be advanced for its selection, provided that the same end can be obtained." The same argument may be applied to the choice between the prolonged crushing operation of litholapaxy, which implies a certain amount of manipulative skill on the part of the operator, and in favor of the supra-pubic lithotomy, whose technique is very simple, and in these days of widespread knowledge of antiseptics is comparatively a safe surgical procedure.

VI. Nephrotomy for the Relief of Sudden Total Suppression of Urine Occurring Some Time After Nephrectomy.

with the report of a successful case.

By WILLY MEYER, M.D.,
NEW YORK.

It has been my good fortune to perform so far extirpation of a diseased kidney six times (from October, 1890, to October, 1891), and not to have lost any of the patients. They are all in good health to-day and enjoy life. To go here over their histories would lead me too far, although every one of them contains some points of interest. One of the six cases, however, is so comparatively rare, and the result of prompt operative interference so extremely gratifying, that I think it worthy to be reported:

Miss R. G., twenty-eight years of age, had always been healthy until 1890, when she was seized with a full, oppressive feeling and some pain in her right hypochondriac region. The pain increased for about two hours, then it suddenly ceased. Similar attacks recurred at intervals of six to eight weeks. She consulted her family physician, Dr. A. M. Lesser, of New York City, but the most careful examination failed to detect anything abnormal. There was no fever, feces were colored, urine normal. In December, 1890, a similar attack set in: this time, however, with considerable rise of temperature and general distress. Patient had to stay in bed for nearly one week. This time a small tumor could be felt below the border of the right ribs and close to the outer border of the right rectus muscle. It suddenly disappeared on the fifth day, leaving no trace behind. It could not be made out whether during these attacks the secretion of urine had been scarce, and whether coincident with the sudden improvement an abnormally large amount

had been voided. The patient felt entirely well for nearly four weeks, when the trouble recurred in a more serious form for the third time, also with considerable fever, great local sensitiveness, and general malaise. An eminent physician was called in for consultation, who diagnosticated cholelithiasis, and advised, in view of the frequently recurring attacks, operative interference. When I saw the patient with Dr. Lesser, on January 30, 1891, I could not but concur with the two gentlemen's diagnosis. There was a tumor of about the size of a fist, palpable below the border of the right ribs, between the anterior axillary and the median line, the greatest prominence corresponding to the outer border of the right rectus muscle. At this spot the hand, gently placed upon the abdominal wall, felt a soft crepitation, and created pain on pressure. Gentle bimanual palpation seemed to reveal a movable growth, which reached so close to the surface, however, and was so prominent anteriorly (also left the lumbar region of the same side so comparatively flat) that it did not impress me at all as being of renal origin. Moreover, the patient had a yellowish-pale color, and the urine was normal. I therefore abstained from inflating the colon or tapping the tumor, and was also inclined to attribute the symptoms to cholelithiasis, with one or more gall-stones impacted in the cystic duct, which did not entirely block its lumen. Only now and then, so I calculated, did such stones entirely occlude the duct, and then the occlusion was due less to the size of the stone than to active contraction of the muscular coat of the duct around it. I advised the continuance of the treatment—small doses of morphine and ice-bag—and operation as soon as the inflammatory symptoms should have subsided. Twelve days later Dr. L. called on me, stating that the pain and fever had lessened, the size of the swelling was not materially increased, and that the patient was now ready for the operation for biliary calculus. I did not see the patient again until the day of the operation—February 12th—when bimanual palpation of the patient for the first time under ether led me to modify my original diagnosis, for now the tumor rather seemed to originate from the kidney than from the gall-bladder. Still, I opened the abdomen outside of the rectus muscle, and was not greatly surprised to find that the tumor was really retro-peritoneal. The pre-renal peritoneal fold was greatly hyperæmic, but there were no adhesions. The wound was sewed up at once with silkworm gut. Two sutures in the middle of the incision, which corresponded to the greatest convexity of the tumor, had to be very snugly tied, in order to bring the divided tissues into proper apposition. I purposely did not add a retro-peritoneal operation at once, as nephrectomy, not only nephrotomy, might be indicated, and for this I wanted the patient to be properly prepared. I also wanted to perform cystoscopy first, in order to determine the excreting power of the other kidney. For, if my aspirator should draw a transparent fluid from the swelling, simple inspection of the urine would not suffice to enable me to estimate the condition of the companion gland. If, however, pus should be found, cystoscopy would not be necessary, for I could at once infer that the opposite kidney was in good working order and excreting all the urine that was passed—for this was perfectly clear; which fact would point to an occlusion of the right ureter, preventing any descent of fluid from a purulent kidney.

Temperature was slightly raised in the first two days after the initial operation, but did not exceed 100.5°. Otherwise no reaction followed. The patient only complained of some pain in the line of incision. Stitches were removed on the eighth day, when the wound had healed by primary union throughout.

Twelve days later Dr. L. notified me that the middle of the wound had reopened and gave a continuous exit to a large amount of flocculent pus. Evidently the two silkworm-gut sutures in the middle of the wound, which could only be tied with some difficulty at the time of the operation, had made a local pre-sure necrosis on the sac which, once started, was rendered complete by the presence of purulent fluid in the renal tumor. Meanwhile adhesions had formed within the pre-renal fold, so that none of the pus entered the peritoneal cavity. No drainage-tube was introduced. The wound was loosely covered with an antiseptic moist gauze dressing. As the symptoms due to distension of the kidney were now relieved by this spontaneous perforation of the sac, there was no urgency for immediate interference, and we used the next weeks to build up the patient. Cystoscopy was not now needed to test the functions of the opposite kidney, as all the secretions of the diseased gland passed through the fistulous opening in the abdomen, and the clear urine which continued to pass *per urethram* in normal quantity and quality was evidently secreted by the kidney of the opposite side.

On March 19th nephrectomy was done with the help of an incision parallel to the border of the twelfth rib, to which later a short second one, passing from nearly its middle at right angles, was added. I nicely succeeded in peeling off the sac from the opening in the abdominal wall as well as from the parietal peritoneum, which appeared extremely thin over the whole area. Then the ureter was first divided separately. As usual, this greatly facilitated the tying of the renal vessels, which was done with strong silk. The ligature was left long. The kidney presented a number of cavities which were filled with thin purulent fluid, intermingled with thick, flocculent, coagulated material, and peculiar round, semi-solid masses, which impressed me as the organic skeleton of beginning stones which were not yet hardened by the deposit of salts. The pelvis of the kidney and the ureter were found to be filled with the same material. The latter was flushed out by irrigation as much as possible, yet a thin, soft rubber bougie could not be pushed down into the bladder. Nor did I succeed in throwing warm boric water through the ureter by means of a hand syringe, although a good deal of pressure was used. After proper disinfection the cut in the muscles was closed by a number of catgut sutures, and the greater part of the outer wound sewed up. A small drain was introduced through the abdominal fistula and the large irregular wound loosely packed with iodoform gauze. The patient stood the operation very nicely. Temperature and pulse remained normal. From the second day on she passed the normal amount of urine, which was as clear as before. The silk ligature which tied the pedicle was extracted four weeks after the operation. Recovery was progressing very favorably; the patient was already sitting up, receiving company, etc., when on Sunday, April 26th, thirty-eight days after the operation, and on the day menstruation was due, which, however, failed to set in, a short while after normal micturition, she

felt a sudden dull pain in the "left" lumbar region, with an urgent desire to urinate. She tried to do so, but could not pass one drop. She waited a few minutes, and then tried again; not a drop. The doctor was sent for. He at once introduced a soft rubber catheter. The bladder was empty. Hot drinks and digitalis were ordered. A restless night was passed, especially disturbed by the continuous lumbar pain. At an early visit on the next morning catheterization was again practised. The bladder was still empty. Now the doctor conveyed the tidings to me. There was no doubt in my mind that the sudden absolute anuria was due to blocking of the ureter of the remaining kidney by some mechanical obstruction. I saw the patient at once. She was greatly depressed, as she was perfectly conscious, and being an intelligent person, understood what was at stake. We agreed to wait a short time, and in the meantime see whether we could with the help of very strong heart stimulants, diuretic drugs, and the introduction of a large amount of fluid, increase the secretion of urine sufficiently to overcome the obstacle in the ureter. If we did not succeed, nephrotomy would be necessary. To aid in the elimination of urea from the system cathartics were ordered. But, as was feared would be the case, the anuria continued. Not one drop passed the blockade. Moreover, the lumbar pain increased; the pulse became somewhat slower. Patient vomited once. On Wednesday, April 29th, at noon, two and one-half days after the onset of the symptoms, I made the lumbar incision, with the patient in Lange's position.[1] As soon as the quadratus lumborum muscle had been divided, a marked œdema of the subjacent tissues was noted. The peri-renal adipose capsule was bluntly separated and the purplish-red kidney appeared. It was not materially enlarged, but dense to the touch. A concrement could not be palpated, nor did a needle plunged into the pelvis and the renal tissue at different points strike one. It was interesting, however, to watch the many small fountains of arterial blood which were ejected out of every puncture-hole synchronously with the pulse. I allowed these to spurt for a short while, and thus reduce the immense arterial hyperæmia of the organ before I had them compressed. I now was obliged to add two short transverse incisions to the original longitudinal one, starting from both ends of the latter at a right angle and penetrating the entire thickness of the erector trunci and sacro-lumbalis muscle (Bardenheuer's Thuerfluegelschnitt), in order to fully expose the upper portion of the ureter. Then the latter was longitudinally incised with a knife as low down as possible, with the hope to be better enabled to extract a stone which might have become impacted in its course. As soon as the ureteral canal had been opened a mass of sero-pus, large shreds, and coagulated pus and blood escaped. The same material absolutely corked the ureter for a distance of at least two inches. A thick probe pushed down with some force entered for perhaps one-half inch, but then was stopped. It did not strike a stone. Evidently an abscess, previously encapsulated in one of the pyramids, had perforated into the pelvis of the kidney. A thin Nélaton catheter was now introduced into the ureter downward alongside its wall, which was stretched with the help of two mouse-tooth forceps, and through it warm

[1] Annals of Surgery, 1885, ii, 295.

boric water forcibly injected by means of a hand syringe. Thus I succeeded, little by little, in washing out the débris backward toward the pelvis of the kidney. When the injected water returned clear, the lower end of the catheter was cut off obliquely and pushed toward the bladder as far as possible, and a number of syringefuls of water flushed down into that viscus, which had not been distended by a natural flow for three days. The patency of the ureter was thus reëstablished. That not the slightest obstacle was any more in the way of a normal kidney drainage, was proved by a rubber bougie which corresponded to the ureteral calibre, and was passed down into the bladder in its entire length without any resistance. To guard as much as possible against a return of this deadly occurrence, the wound in the ureter was still enlarged in an upward direction, thus dividing the pelvis of the kidney. The latter was found not to be materially enlarged, but filled with the same material as the ureter had been. It was rapidly cleared by gentle irrigation. A curved steel sound then introduced into the different calices failed to touch a stone. I was satisfied that the obstacle had been successfully removed. Now the wound was loosely filled with iodoform gauze, the rectangular skin-muscle flap turned back and fastened to the opposite border by a few silkworm-gut sutures, which were again loosely tied. The incision in the pelvis of the kidney and the ureter had, of course, been left open.

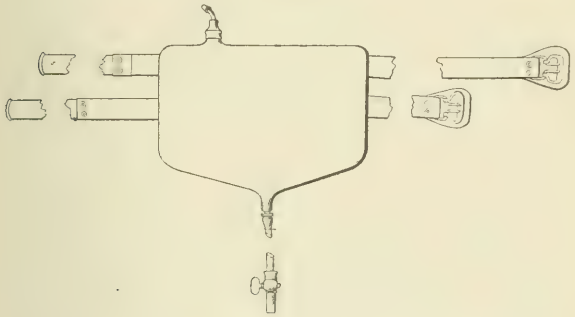
The immediate as well as the remote result of this operation was gratifying in the extreme. The kidney at once resumed its work. At the evening of the operation dressing and bed-covers were soaked with urine; on the second and third days somewhat less, as a great part of the urine entered the bladder again and was voided *per urethram*. The gauze tampon had no doubt become adherent to the wound of pelvis and ureter, and thus forced the urine to pass the natural passages. It was very tempting to leave the gauze in place for six or eight days, meanwhile allowing the wound in pelvis and ureter to heal by primary union. But after some deliberation it seemed better to me rather to adopt a slower but safer method. I extracted the gauze after three times twenty-four hours, to the great displeasure of the patient, as nearly the whole amount of urine at once made its way through the lumbar incision. Nevertheless the wound healed without any special reaction. A renal fistula established itself in the upper and one in the lower right angle. These two fistulæ were slowly drying up toward the end of the fourth week after the operation, when the correctness of the after-treatment was clearly demonstrated.

One day before the next menstruation was due the urine, which had been clear and had for the most part passed the bladder, again suddenly made its exit through the lumbar opening in its entire quantity. Temperature rose to 101°, pulse rate to 130. The catheter drew a few drops of heavily turbid water from the vesical cavity, but only once. Later on it was found empty. The former accident had recurred! A thin English catheter, bent according to the probable shape of the upper urinary passages, could be pushed in for several inches, and drew urine mixed with shreds. But at a certain distance it was stopped. Water injected through it returned murky. I deemed it to be the wisest to abstain from any further irrigation for the time being, as I could not see what I was doing, and as the artificial safety-valve guarded

against a return of the anuria. I also thought it best to abstain, for that time at least, from trying to push a thin rubber bougie or catheter through the vesical mouth of and into the left ureter with the help of Boisseau du Rocher's cystoscope. I trusted in Nature and time to dissolve the coagulated mass in the ureter, and thus restore the former hopeful condition. But it took Nature a good time to fulfil this hope. For eight weeks the kidney found its drain through the lumbar fistula. The patient was continuously wet and extremely annoyed and despondent, although large pads of moss nicely absorbed the fluid.

As the prognosis with reference to restoration of the normal flow of the urine was extremely uncertain, I designed a renal urinal, which was made by Messrs. George Tiemann & Co., New York. As you see, it presents the shape of a "bustle" as worn by the ladies a few years ago (Fig. 1). A soft

Fig. 1.



rubber catheter, which drains the pelvis of the kidney and fits water-tight in the fistula, enters the bag at its upper end in such a way that it conveys the urine into it, but by means of a valve prevents it from returning through its channel, if the patient should lean back in a chair for instance, and thus compress the partially filled bag. A long tube with a stop-cock at its end is given off from the lower end of the bag, and, passing between the legs of the patient, is fastened at some convenient spot in front. (Fig. 2.) I have no doubt that this mechanism would have worked nicely. Happily, we had no chance to use it, in this case at least, as in the seventh week after the last clogging, a worm-like shred, four inches long, of a grayish-white color, and the size of the ureter, was expelled out of the latter's vesical opening and suddenly passed with a larger amount of urine, to the greatest delight of the patient. It took only a few days to dry out the upper fistula, but no persuasion from our side was needed to induce the patient to leave a drainage-tube there *in situ*. It was no easy task to retain it in place. However, it was forced to do so, and worn for nearly six months, although no urine ever

passed it. The wound in the pelvis of the kidney had cicatrized, and the tube led down to it as a guide. Seven weeks ago, on December 12th, it slipped out by chance, and could not be re-introduced on the following day.

Fig. 2.

To-day the wound is firmly closed and the patient in the best of health. She passes a normal amount of clear urine[1] and has no trouble whatever. Of course, she is kept and keeps herself under close medical observation.

As you have seen, this case presents a number of interesting points:[2]

First, the strict indication for nephrotomy in a case of sudden anuria which occurs some time after nephrectomy and a period of uninterrupted recovery with the secretion of a satisfactory amount of urine. I should rather add the word "absolute" to sudden, as I have seen in my third case of nephrectomy that if the ureteral canal is not entirely blocked, the *vis medicatrix naturæ* can itself effect a cure. In that case cystoscopy, performed before nephrec-

[1] I should mention that some turbidity of the urine was greatly improved during the latter part of last year by the administration of methyl-blue (Merck) three times a day, 1½ grain in capsule. (Cf. M. Einhorn, N. Y. Med. Record, 1891, vol. xl., p. 643.)

[2] I want to emphasize at this spot that in my following remarks I exclude all reference to *tubercular disease* of the kidneys.

tomy, had demonstrated prolapse of the ureter on the other side, and had therewith established the diagnosis of an irritative process in the remaining kidney, probably its pelvis.[1] On the thirty-ninth day after the operation, and after an equally long time of perfect comfort and undisturbed recovery, an abundant hæmaturia set in. But the blood and coagula, with a very scarce amount of urine, were voided *per urethram*; there was no "absolute" anuria. On the sixth day after the onset of this at times extremely critical trouble, the patient passed a stone, which at once put a pleasant conclusion to all further ailing. Only the very weak condition of the patient at that time prevented me from using the knife. Of course, I am now glad of this.

The answer *which operation* should be performed in such a sudden case of absolute anuria can only be the one—*nephrotomy*. It will be best done in Lange's position, with an incision that permits free access to the pelvis and upper portion of the ureter for hands and eyes (lumbar, longitudinal, or angular incision, or Bardenheuer's Thuerfluegelschnitt). Only if the obstruction should not be found at that portion of the urinary tract, certainly an exception, Bardenheuer's extra-peritoneal exploratory incision, or the incision of James Israel, of Berlin, proposed for a free access to the ureter in its entire length,[2] should be resorted to besides, and the cause searched for alongside the lower portion of the ureter.[3] We undoubtedly have a right to go ahead in this way, in view of the certain death of the patient if no relief is obtained.

A further interesting point is the coincidence of the repeated blockings of the ureter with the time of menstruation. No better proof could be given of the great influence exercised by menstruation upon all the abdominal viscera, especially the kidneys, and above all upon the left kidney, owing, perhaps, besides the nervous connections, which are common to both, to its close vascular con-

[1] Cf. Author: "The Progress of Cystoscopy in the Last Three Years," N. Y. Med. Journal, 1892, pp. 173 and 174.

[2] "Ueber Nephrolithotomie bei Anurie durch Nierensteineinklemmung; zugleich ein Beitrag zur Frage der reflektorischen Anurie," Deutsche med. Wochenschrift, 1888, p. 7. This incision begins at the anterior border of the sacro-lumbalis muscle and runs parallel to, and about one inch apart from, the twelfth rib to the latter's anterior end. From there it is carried obliquely downward near to the middle of Poupart's ligament, where it turns to the middle line and ends at the outer border of the rectus muscle. The incision also is extra-peritoneal.

[3] Cf. A. T. Cabot. "A Successful Case of Ureteo-lithotomy for an Impacted Calculus," Boston Medical and Surgical Journal, 1890, p. 247.

nection with the left ovary through the ovarian vein. It is well known that the left ovarian vein generally empties into the renal vein, whereas the right ovarian vein empties into the vena cava.[1]

There are a great many more interesting points in the history of this case which might be discussed here. But it would lead me too far, in view of the limited time given me to-day. I only should still like to state that, as far as a careful perusal of the literature has shown me, this is the second case on record where nephrotomy successfully cured sudden absolute anuria occurring some time after previous nephrectomy on the other side, and the fourth where total suppression of urine setting in some time after an operation on one diseased and later useless kidney (nephrectomy or nephrotomy), and evidently due to an occlusion of the ureter of its fellow, has been overcome by attacking this remaining gland, which alone attended to the secretion of urine.

On January 3, 1882, B. Bardenheuer, of Köln, Germany,[2] had opened a pyonephrosis on the left side in an unmarried lady, twenty-seven years of age, by the lumbar incision. The abscess was soon closing up and patient doing well; only a very scarce amount of

[1] The possible dependence of these renal accidents upon the peculiar anatomical relations of the left ovarian vein was suggested to me by Dr. Mary P. Jacobi. (Text-book on Anatomy, Vienna, 1875, p. 949: Cf. J. Hyrtl; Lusk's System of Midwifery, p. 25.) The greater frequency of hyperæmia of the left kidney has also been attributed to the fact that the left renal vein will at times pass behind the aorta. There evidently occurs an excessive hyperæmia in the remaining kidney also immediately after nephrectomy. Its presence is demonstrated by the sudden change in the transparency of the urine, if that remaining kidney had already been slightly affected. I have seen that in two of my cases, and could not explain the phenomenon in a different way. Certainly it has been observed by many who have done several nephrectomies that in a number of cases, immediately after the one unhealthy kidney has been removed, the urine which descends from its, probably only slightly affected, fellow, and which had formerly been found comparatively *clear*—with the help of cystoscopy, or after nephrotomy, on the other side had been done—suddenly becomes very turbid, and presents an unusually heavy deposit after short standing. As I have seen, it can take weeks or months before this turbidity lessens or disappears. In the majority of cases it does so, however, but slowly and gradually.

M. Schede ("Meine Erfahrungen ueber Nieren-ex-tirpationen" Separat-abdruck aus der Festschrift zur Eröffnung des Krankenhauses, Hamburg, 1889, p. 45, foot-note) also mentions this necessarily present, suddenly increased arterial pressure in the remaining kidney after nephrectomy on the opposite side. He is inclined to look at it as the probable cause of the acute epithelial necrosis ("Coagulations-Nekrose") in the tubuli contorti of I. and II. order of the kidney, which has been found in a few instances after nephrectomy on microscopical examination of the remaining kidney and to which the immediate fatal result of the operation evidently was due.

[2] O. Thelen: "Nephrolithotomie wegen Anurie." Centralbl. für Chirurgie, 1882, No. 12.

clear urine was voided through the wound. On February 8th, the thirty-sixth day after the operation, a sudden chill with total suppression of urine set in. The catheter found in the bladder only some mucus and a small stone. Pain in the back and the right lumbar region running down toward the bladder; nausea. On the following day the high fever, pain, and absolute anuria continued; patient had twice vomited some greenish mucus. February 9th, operation: Lumbar incision on the right side, with an additional transverse cut at its lower end which ran backward. The kidney was shelled out of its adipose capsule. When this had been anteriorly done the finger reached the pelvis of the kidney and the upper end of the ureter. A small stone could be felt in the latter, which, by palpation, suddenly slipped back into the pelvis of the kidney. At the same moment a stream of urine was expelled through the urethra. The communication between kidney and bladder had been reëstablished. Now the stone was pressed back with two fingers of the left hand into the ureter, the latter incised with a knife, and a smooth, longitudinal concretion of the size of a bean extracted. Four more small stones were removed from the renal pelvis. The wound in the ureter was closed by three silk sutures, and the large wound loosely packed with antiseptic gauze. Soon afterward the urine made its way through the wound. On the fourth day after the operation there was chill and recurrent anuria. Under narcosis the upper portion of the ureter was bluntly loosened for some distance, divided, and fastened in the lumbar wound. On March 12th, the patient was without fever and slowly recovering.

In 1885, R. Clement Lucas,[1] of London, performed nephrolithotomy (following nephrectomy) for total suppression of urine on a female patient, thirty-six years of age. There was a strong family history of consumption. For seventeen years she had suffered from hæmaturia at intervals, and for nine or ten years this had been accompanied with pains on the right side of the abdomen; for seven years a tumor, diagnosticated as a floating kidney, had been felt on this side. On July 14th nephrectomy was done for stone-kidney on the right side. Uninterrupted recovery. On October 24th, three and a half months after the operation, the patient was suddenly seized with most violent and agonizing pains in her back and left loin.

[1] "On a Case of Nephrolithotomy (following Nephrectomy) for Total Suppression of Urine Lasting Five Days; Complete Recovery and Good Health for Five Years After the Operation," Proceedings of the Royal Med. and Chirurg. Society, 1890.

The pain passed through the loin to the front of the abdomen and groin. She passed a little urine, but then all secretion stopped. Vomiting commenced soon, and was continued at intervals and whenever anything was taken. On the fifth day of anuria the patient became drowsy and weak, so that it was difficult to rouse her to obtain answers to questions. The pelvis of the left (remaining) kidney was opened and a conical stone extracted which had acted as a ball-valve to the top of the ureter. It was more than three-fourths of an inch in length and from three-eighths to five-eighths in diameter. Urine began to drop at once out of the wound as soon as the pelvis of the kidney was opened, but the pelvis was not found much dilated. For twelve days all urine was passed by the wound in the loin. Then one and a half ounce was passed with great pain from the bladder, and the quantity gradually increased. After the ninth day all the urine was voided by the natural passages. Ten weeks after the operation healing was complete. Five years later the patient was still living and enjoying the best of health.

In 1886, F. Lange, of New York City, reported a case of total suppression of urine in a man thirty years of age, which occurred eight weeks after nephrotomy on the left side had been performed for pyonephrosis and multiple stone on October 2d.[1] The first kidney, or rather the wall of the pyonephrotic sac, had to be left in place at that time. After a few weeks the discharge from the existing fistula was moderate, apparently very little admixture of urine. About November 25th patient commenced to complain of pain in the abdomen. Urine became scanty. Three days later only a few drops could be withdrawn from the bladder. Nothing had been passed within the last twenty-four hours. On the morning of the 29th, abdomen tympanitic, very painful; principal pain, however, located in the right side, while the first operation had been done on the left. Pulse weak; dyspnœa; beginning collapse. Not a drop of urine in the bladder. Occlusion of the right ureter was diagnosticated and nephrotomy at once done on this side. The fat from the posterior aspect of the kidney having been removed, an abscess was found in its substance and quite near the insertion of the pelvis. It was near perforation. Being opened, the finger passed without resistance into the pelvis. In withdrawing it a

[1] "Two Cases of Renal Surgery," The Medical News, 1886, p. 69.

great quantity of bloody urine escaped. A long, slender, thin-bladed dressing forceps pushed into the first part of the ureter soon met with a resistance without having the touch of a stone. The obstruction was found to be a whitish-gray plug, about the size of the end phalanx of the small finger, somewhat flattened and conical, resistant but brittle, and apparently consisting of an old fibrinous clot, into which watery substance and numerous gravel-like concretions were imbedded. It was washed out by means of a hand syringe. On the first day after the operation three quarts of a cloudy, slightly bloody urine had been discharged. Almost all the urine seemed to pass by the normal channel. The patient made an uninterrupted recovery. He is, as Dr. Lange kindly informed me, still living and able to work. He has a fistula in his left loin, which only discharges a few drops of pus, no urine, and probably leads down to remnants of stone. The fact that during the occlusion of the right ureter no urine was found in the bladder is conclusive proof that the left kidney had already at that time entirely lost its significance as a urine-secreting organ.

Two questions are still strongly presenting themselves to the mind of the careful observer:

I. Is not the suppression of urine in a few of those happily rare cases where fatal, absolute anuria sets in and continues, "immediately" after nephrectomy, also due to a similar mechanical cause—provided the cystoscope had previously demonstrated the existence of a working kidney on the side opposite to the seat of disease?

It is well known that a number of deaths caused by acute uræmia after the removal of one kidney have been reported. If a thorough post-mortem examination was not made or could not be obtained, they were mostly explained as due to a nervous reflex anuria.[1]

II. If this sudden total suppression of urine sets in and con-

[1] That such a nervous reflex anuria, dependent upon a mechanical irritation on the one side, really exists, is nicely demonstrated by the case of James Israel (Deutsche med. Wochenschr., i., c.): Man, forty-nine years of age, suffering for years from gout and right renal colic. Nov. 15, 1886, left renal colic; Nov. 16, total suppression of urine; Nov. 21, lumbar incision on the left side. Stone found in the pelvis of the kidney, entering and occluding the ureter; extracted. A second stone, impacted in the ureter, 10 cm. lower down. It is pushed up into the renal pelvis with two fingers from the outside of the ureteral canal, and then extracted through the same wound. Both kidneys at once resume their work, as proved by the different result of qualitative analysis of that urine which passed the bladder and that which was discharged through the wound.

tinues "immediately" after the removal of one kidney in cases where—

1. The retro-peritoneal incision had been made;

2. Strong antiseptic solutions (sublimate and carbolic) were not used in the wound;

3. Shock and great loss of blood had not been present at the time of nor after the operation;

4. The cystoscope had shown a well-working kidney on the opposite side before the operation, and

5. Strong and continuous stimulation failed to work,

—and if then a deep and protracted chloroform-narcosis does not restore the renal function, thus making a nervous (reflex) origin of the anuria improbable:[1]

Is not nephrotomy on the remaining side then indicated? If nothing is done the patient will certainly die; if an obstruction is found and removed, there is hope for recovery.

But suppose no mechanical obstacle were found in the pelvis of the kidney nor in the ureter! Then an artificial direct depletion of the organ could perhaps still prove useful. It would reduce the hyperæmia, which followed in the remaining kidney upon the ligature of the renal bloodvessels on the operated side.[2] (If the acute coagulation-necrosis of the epithelial cells in the tubuli contorti has taken place, such a procedure will be useless. Still the puncture and direct depletion will not aggravate the trouble).

As far as I could ascertain, nephrotomy on the remaining side has never been performed yet in cases of this kind.

I would not, then, let a patient of this kind die without having tried with the knife to save his life. If there were the slightest hope that the patient could stand further operative interference, I would cut down on the kidney and satisfy myself whether drainage from the kidney were free. And if everything there should be found

[1] J. Israel: Loc. cit., p. 6.

[2] Of course, any increase in the renal arterial pressure will, under ordinary circumstances, increase the secretion of urine. But may not the sudden *excessive* hyperæmia enlarge the arterial capillaries in the glomeruli to such an extent as to compress the vas efferens, which begins in the centre of the glomerulus? The scarce amount of urine in the first one to two times twenty-four hours after every nephrectomy could be in part dependent upon this condition. The organism generally quickly regulates such circulatory disturbances. For different reasons it may now and then be unable to do so.

in normal shape, I would puncture the kidney in many different spots with a needle, allowing the small wounds to bleed freely. I would then only loosely pack the wound, and take every care to avoid pressure from outside.

Reviewing this case,[1] the following conclusions may perhaps with propriety be drawn :

1. Before nephrectomy cystoscopy should, if possible, be undertaken to prove the presence of a working opposite kidney. This will be generally unnecessary, if a renal fistula exists on the diseased side, and the urine, voided *per urethram*, is clear and sufficient in quantity. But even in these cases cystoscopy will be a desirable procedure for making a more definite prognosis.

2. If the cystoscope has demonstrated the presence of a working opposite kidney, and if then absolute anuria suddenly sets in some time after nephrectomy, and a period of uninterrupted recovery with the secretion of a satisfactory amount of urine, the cause must be a mechanical one. Nephrotomy on the remaining side is then indicated as the only means to save the patient's life.

3. Immediately after nephrectomy there is, in all probability, an acute hyperæmia of the opposite kidney. This hyperæmia also frequently occurs in the female sex, especially in the left kidney, at the time of the menstrual period, but probably to a much less extent.

4. Such hyperæmia may suddenly increase an incipient or hitherto entirely latent disease in this remaining kidney. It can even cause the perforation into the pelvis of the kidney of an abscess previously encapsulated in one of the pyramids.

5. Such an aggravation of disease in the remaining kidney may be repeated at a number of menstruations, but is, in the majority of cases, of a passing, not of a permanent character. After such attacks (cf. 4) the remaining kidney often shows an improved condition.

[1] And, with reference to conclusions 3, 4, and 5, also reviewing my other five cases of nephrectomy.

VII. The Crossed Suture.

By GEORGE RYERSON FOWLER, M.D.,
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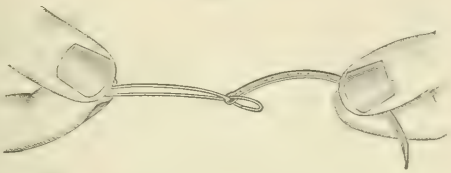
In many operative procedures, when the method of immediately and completely closing the wound is employed, it is quite essential that the several layers of the walls of the incision be brought together separately and perfectly. In some instances, particularly when the attempt is made to bring together the aponeurosis of the external oblique and the edges of Poupart's ligament, in the operation for radical cure of hernia, the tension is so great as to lead one to distrust the buried catgut suture when employed for this purpose. On the other hand, if the operator depends upon including all of the structures comprising the wall of the wound in the suture in the ordinary manner, it will quite generally happen that the skin surfaces will be drawn upon, while at the deeper portion of the wound considerable gaping occurs.

In order to obtain all the advantages of the buried suture, and yet be enabled to remove the latter at will, at the same time doing away with the necessity for depending upon an absorbable material, always uncertain as to the length of time that it will hold with sufficient firmness in the tissues, I have devised what I have called "the crossed suture." It consists essentially of a suture which separately unites the different layers of the wall of the wound, and which is crossed over each layer in turn as it progresses from below upward from the deeper portions of the wound to the integumentary surface. Either silkworm-gut, silver wire, silk, or linen thread may be employed. My own preference is decidedly for the first named. The material is cut to lengths, and is threaded at both ends. The thread is secured in the eye of the needle by passing the end of the silkworm-gut which emerges as the needle is threaded, a second time through the eye of the latter from the same side as that from which it was originally passed. When the flat Hagedorn needles are used, this is not a difficult matter. When the loop which is thus formed is drawn taut, the needle is held securely to the thread (Fig. 1). A single knot securing the thread

to the needle-eye will serve the same purpose, but has the disadvantage of offering a somewhat greater resistance when the needle is drawn through the tissues, and occasionally, as when the serous

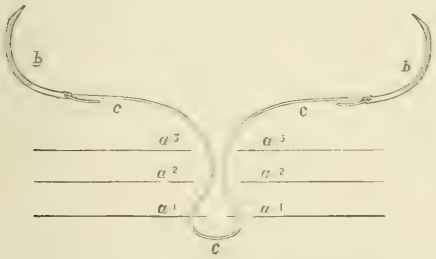
FIG. 1.



coat of the intestine is to be included in the suture, leads to a tearing out of the thread by reason of having made an unnecessarily large track in the tissues in its passage.

The thread being attached at both ends to the needles, the latter are passed through the lowermost layer, from below upward, one through each edge of the latter (Fig. 2). The thread is then

FIG. 2.

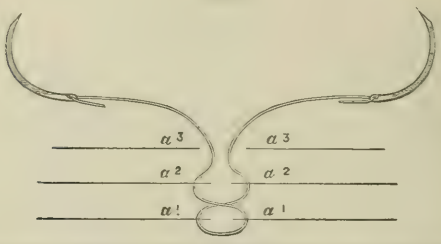


Showing suture passed through lowermost layer at a^1.
a^1, First layer. a^2, Second layer. a^3, Third layer.

crossed above the layer, the needles reversing positions. The needles are then passed through the next layer, are again reversed as regards position, thus crossing the thread again and over the second layer to be secured (Fig. 3). This process is repeated until all the layers are secured, the skin being the last to be included (Fig. 4), when the ends of the sutures are secured in the ordinary manner.

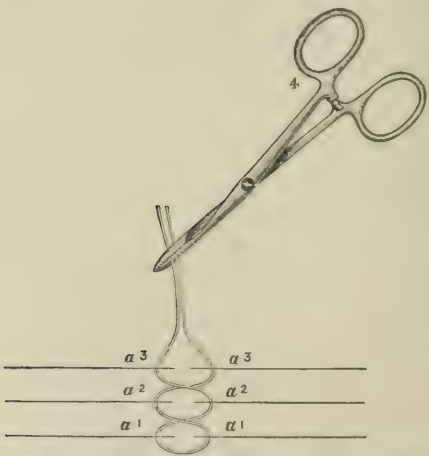
A reference to the accompanying diagrams will aid the reader in understanding the method of application.

Fig. 3.



Showing suture crossed and passed through second layer, from below upward.

Fig. 4.



Showing all three layers included in the crossed suture ready for tying. 4. Ordinary hæmostatic forceps temporarily securing suture for ready identification until all are ready for tying.

This suture may be left in position as long as the exigencies of the case demand its presence. In its removal the thread is cut to one side of the knot lying upon the skin in the usual way, and

withdrawn by making steady traction upon the other side. It may be employed wherever it is desirable to firmly and securely approximate the deeper portions of the wound independently of the superficial or skin portion, and still permit of removal. In laparotomy wounds it will be found particularly useful, first securing the peritoneal surfaces and then the muscular and skin layers in turn. It is likewise especially advantageous in perineorrhaphy and in uniting denuded nerves and tendons. There is an advantage in passing the needle from below upward, particularly in the case of the skin, whatever method of suturing is adopted, and this consists in lessening the dangers of infection from the deeper portions of the integument itself. When it is remembered that this structure is filled with excretory glands with a scavenger-like function, and that the ducts of these are more or less filled with excrementitious material in spite of the most vigorous application of the brush and soap and water—which, after all, only cleans the outer surface—the importance of passing the suture in such a manner as not to drag any of this with it into the depths of the wound will be appreciated.

In passing I might mention a little device which I have found of use in temporarily securing sutures preparatory to tying, and which has saved me much annoyance and valuable time, preventing, as it does, the entanglement of sutures already passed and left lying loosely pending their final adjustment. It consists in clamping the two ends—these being left sufficiently long for the purpose—of each suture in a separate hæmostatic forceps, as soon as passed. As fast as they are thus clamped they are laid to one side, and when all is ready each suture is unclamped in turn and tied (Fig. 4).

NOTE.—In Pozzi's *Gynecology*, vol. ii. p. 980, there is described a perineorrhaphy suture, similar in some respects to the crossed suture. Pozzi ascribes its origin to Heppner. My attention has only been recently called to this suture.

VIII. Treatment of Compound Fractures.

By HERMAN MYNTER, M.D.,
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In no class of accidents is the influence of antiseptic treatment more apparent than in compound fractures. Before the antiseptic period the mortality in these accidents from septicæmia, pyæmia, and erysipelas was simply frightful. No prognosis could be given in a single case, not even in a simple puncture of the skin. Billroth gave, in gunshot fractures, a mortality of 60 per cent. for the femur, and 24 per cent. for the leg below the knee. But in civil hospitals the results were even worse. Volkmann lost 25 of 104 cases of compound fractures from gunshot wounds at Trautenau, or 24 per cent., but 26 of 64 compound fractures of the leg in the hospital at Halle in peace, or 40 per cent., and yet a great many of the external wounds were simple punctures of the skin. Of 885 cases of compound fractures of the leg below the knee, collected from different sources, 339, or 38 per cent., died, while the mortality in war was but 24 per cent. This was the general rule, and not characteristic of any one hospital. Baum, in Gottingen, had 38 per cent. mortality; Billroth, in Zurich, had 38.7 per cent.; the clinic in Breslau had 40.5 per cent.; the clinic in Halle had 40.6 per cent.; the clinic in Bonn had 41.8 per cent.; and Lucke, in Berne, had 38 per cent. I am informed, from credible sources, that at the Buffalo General Hospital, shortly before 1880, 16 consecutive cases of compound fracture of the leg terminated fatally.

It is scarcely to be wondered at that, with such general results, Volkmann's paper on the treatment of complicated fractures, in 1877, occasioned the greatest astonishment. He reported 75 cases, of which 8 were amputated secondarily, but all of the 75 recovered. Of these 75 cases, 43 had fractures of the leg below the knee, of which 1 was amputated. Volkmann's method was as follows: The wound was dilated with the knife in every case so that a finger could be introduced and the fracture seen and felt. The wound was thereafter thoroughly disinfected with carbolic acid solution, all coagula being removed. All pockets under the skin were freely opened in order to drain them, and a number of incisions were made, particularly where the skin was torn loose from the fascia in

order to remove the blood and introduce drains so that the skin might adhere again by first intention. Badly crushed parts of muscles were occasionally removed. The fracture was thereafter disinfected, if necessary through a new incision. All loose splinters were removed, while those attached to the periosteum were left *in situ*. Sharp bone-points were removed with bone-scissors. After repeated irrigation a number of short drainage-tubes were introduced vertically, the wounds sutured and an antiseptic bandage and lateral splints applied. The first dressing decided the fate of the patient. The whole dressing was removed in all severe cases inside of twenty-four or forty-eight hours in order to satisfy him that everything was all right, and thereafter regularly every second, fourth or sixth day until no secretion appeared and until the blood coagula had been substituted by granulations. The drains were then removed, and a permanent plaster-of-Paris bandage applied. The method was successful, although quite laborious.

It is now fifteen years since Volkmann's paper appeared. It ought to have revolutionized the teachings of the treatment of compound fractures; and yet, has it done so? We need only to take any one of the numerous text-books on surgery in the English language, and we will find, in almost all, the following recommendations: If a mere puncture is present, seal it up with collodion or compound tincture of benzoin. If suppurations occur, incise and treat on general principles. If there is a large wound with lacerated edges, syringe it with strong antiseptics, insert drainage-tubes and apply antiseptic bandages and splints. If the bone is comminuted, remove loose splinters, saw off projecting edges, wire the fragmina and treat on general principles. In severe compound fractures—with extensive lacerations of soft tissues, ruptures of large arteries and nerves, and opening of large joints—amputate.

For several years I have employed a uniform and more radical method in dealing with this class of accidents, and the results have been as encouraging as the method is logical. A compound fracture is simply a contused, crushed and lacerated wound, as little inclined to heal by first intention as any other contused, crushed and lacerated wound; not to mention that the wound is often, even in simple punctures, filled with dirt, the sharp ends of the bones having gone through the clothing and into the ground. I have rarely examined such a wound without finding foreign particles in it. To seal such a wound with collodion is as unscientific as it is

dangerous, even if it occasionally heals without any accident occurring. I have, therefore, in every case of compound fracture for several years endeavored to change the contused and lacerated wound into a simple incised wound, in which I might confidently expect healing by first intention.

On admittance to the Sisters of Charity Hospital a patient with a compound fracture of the leg, or any other part, is invariably anæsthetized and the leg is then as thoroughly disinfected as can be done with soap, brush, razor and corrosive sublimate. The wound, even if a simple puncture, is thereafter freely incised, an Esmarch bandage having been previously applied. All tissues that are crushed and lacerated, or suffused with blood and suspicious-looking, are thereafter thoroughly removed with curved scissors—whether they be parts of skin, subcutaneous tissue, fascia, or muscle. I prefer to take away too much rather than to leave anything suspicious behind. Every pocket is opened along its whole length, and treated in the same way. If deep-seated pockets be found between the muscles, large openings are made in the most convenient spot in order to deal intelligently with them. Loose splinters are removed, and, if the fracture is severe or comminuted, the ends of the bones are forced out through the wounds, thoroughly cleansed, and the blood-clots removed between and behind them. Sharp points are removed with bone-scissors, and in comminuted fractures the bone-ends are occasionally sawed off transversely. I have quite often found loose splinters, and even foreign particles, behind the bone-ends.

The Esmarch bandage is thereafter removed in order to find and ligate bleeding arteries and then reapplied. The wound having been thoroughly disinfected with corrosive sublimate (1 : 2000), and the fractured bones having been brought into apposition and carefully held there by the principal assistant, the different wounds are closed with catgut sutures with the exception of about half an inch in each wound, which is left open for drainage. A strict antiseptic bandage is thereafter applied and this covered with a plaster-of-Paris bandage, taking in both the knee and the foot. The Esmarch bandage is finally removed and the wound allowed to fill with aseptic blood. I have not in any case used silver wires or drainage-tubes, both of which are not only superfluous but also necessitate a disturbance of the dressing, and may thereby interfere with the healing process.

This first dressing I allow to remain undisturbed for four to six weeks, according to the severity of the fracture, and when then removed I have in every case found a perfectly healed wound without a trace of pus. If the fracture is not then perfectly consolidated, I reapply the plaster dressing.

During the last three years I have treated 11 cases of compound fracture of tibia and fibula in this way, most of which were very severe: 1 died of delirium tremens on the sixth day, but the wound was found perfectly aseptic; 1 was amputated on the third day on account of gangrene, but recovered; and 9 recovered without any complications such as necrosis, osteomyelitis, suppurations, etc., the wound in every case healing without a trace of pus.

I could with the greatest ease double or triple this little record if I would add compound fractures of other long bones and acute resections of joints on account of injuries. The result has in every case been the same—a perfectly aseptic course, with a minimum of discomfort to the patient.

Is it not, then, about time to rewrite the chapter on the treatment of compound fractures? I add a brief history of eleven cases, giving in each case the age, cause, condition on admission, and the result. It is valuable particularly in showing the uniformity of results in most different degrees of lesion and in different ages.

In this way I have successfully treated fractures on account of which I formerly should have amputated without hesitation, and I have very greatly modified my ideas of what is an indication for primary amputation. Let me, as an example, mention more fully Case 11, in which I had the opportunity of examining the wound on the sixth day, the patient then dying of delirium tremens:

P. F., aged twenty-one years, was brought to the Sisters of Charity Hospital on November 30, 1891 with the following history: Eighteen hours previously, while blasting in the Niagara tunnel, a large rock weighing several tons fell, striking him on the right leg in the lower third, producing a compound comminuted fracture of both tibia and fibula and extensive lacerations of the soft parts. On examination at the hospital two large lacerated wounds were seen: one on the anterior surface, through which bone protruded, and one behind, extending well up on the calf. Both wounds were filled with numerous particles of earth and stone, some as large as beans. Under ether narcosis the wounds were freely enlarged and a third incision made over the fibula. Ten large splinters were removed, leaving a gap about two inches long between the ends of the bones. The

bone-ends were thereafter protruded through the wounds and sawed off transversely. At the point of fracture the bellies of all the muscles except the peronæus longus, tibialis anticus, and soleus were found torn across and pulpified for several inches. The crushed parts were removed with scissors, and also all lacerated subcutaneous tissue and parts of skin. The posterior tibial artery was found ruptured, and was doubly ligated. The foot was then held in place by the skin, the three muscles mentioned, and the anterior tibial artery. The condition of the nerves was not ascertained. The wound was thereafter thoroughly irrigated, the incisions sutured with catgut in the way previously mentioned, the foot pushed upward to approximate the bone-ends and held carefully in place while antiseptic dressing and a plaster-of-Paris bandage were applied. By measurement there was then fully two inches shortening. Moderate surgical fever followed, but the toes were warm and the patient comfortable until December 4th, when he was attacked by delirium tremens, to which he succumbed on December 6th. The dressings were found perfectly sweet, without a trace of pus, and the wounds in the skin entirely agglutinated or healed. A blood-clot was found organized around the bone-ends and between the severed muscles, and the whole condition gave every evidence that the final result would have been favorable if he had not died of delirium.

No. Entered.	Name.	Age	Occupation.	Cause and condition.	Result.
1 Nov. 8, 1888	John Meyer,	65	Tramp.	Struck by railroad train. Lacerated wound of middle third of leg, protruding bone-ends, oblique fracture with several loose fragmina. Wound full of dirt and coal dust. Soft tissues badly lacerated.	No rise of temperature. Feb. 15, 1889, dressings changed; they were dry and no pus. Wound healed. Some looseness of fracture, and plaster dressing was reapplied. April 15, 1889: Discharged cured.
2 Jan. 10, 1889	Timothy Cronin,	28	Printer.	Slipped on icy street and sustained compound fracture of both bones of right leg at junction of middle and lower third. Fracture oblique and bones protruding on anterior surface. Soft tissue badly crushed and lacerated.	Jan. 11, 1889, toes cold, bandage loosened. Jan. 13th, no return of circulation; gangrene. Amputation below knee. Made a good recovery.
3 Oct. 9, 1890	E. Clifford,	24	Carpenter.	Fell fifteen feet from a ladder producing compound fracture of both bones of left leg in lower third. Upper fragmea protruding three-quarters of an inch; wound full of dirt. Soft tissue and muscular tissue badly lacerated.	Temperature on second day 101°; third day normal. Discharged December 5th. No deformity.
4 March 29, 1891	Pat Kelly,	24	Carpenter.	Fell from scaffold. Compound fracture near ankle-joint. Several pieces of bone removed.	Discharged April 27, 1891. Recovered.
5 Oct. 29, 1890	John Gettleker,	45	Huckster.	Was thrown from his wagon, fracturing both legs. Simple fracture of left leg; compound fracture of right leg in middle third. Fracture oblique; punctured wound on inner aspect of leg.	No rise of temperature. Discharged April 27th Recovered.

No. Entered.	Name.	Age	Occupation.	Cause and condition	Result.
6 Feb. 28, 1890	C. Mayor,	24	Unknown	Fell on icy sidewalk. Punctured wound on anterior surface of left leg; oblique fracture.	No rise of temperature. May 7th, wound healed but fracture still loose. July 24th, discharged; recovered.
7 Sept. 18, 1891	S. Eastman,	30	Brakeman	Struck by engine. Compound transverse fracture of tibia and fibula, middle third, left leg. Bones overlapping fully an inch. Punctured wound on inner surface. A large incision was made in order to reduce the fracture, it being impossible to do so by extension alone. A great deal of crushed tissue and pulpified muscle was cut away. Sharp edges of bone cut off.	Temperature on second day 100°; thereafter normal. October 24th, wound healed without pus; fracture still loose. November 26th, still some looseness. The callus severely manipulated and plaster reapplied.
8 Sept. 30, 1891	Fred Ullman,	9	Schoolboy	Fell under cars. Right leg crushed to a pulp in middle third; in left leg a badly compound fracture between middle and lower third. Right leg amputated below knee-joint. On left leg soft parts badly crushed; punctured wound on inner surface, through which upper fragmina protruded.	No rise of temperature. Discharged recovered November 18th.
9 Nov. 6, 1891	James Thomas,	40	Colored miner.	Struck in the Niagara tunnel by a large rock on left leg on day before. Compound fracture of tibia and fibula in the middle. Fracture oblique with ends of lower fragmina protruding through the skin.	No rise of temperature. December 20th, wound healed, but some looseness of fracture. Plaster dressing reapplied. Is still in hospital.
10 Nov. 10, 1891	Mrs. Whisling,	47	Housewife	Thrown from a wagon eighteen hours previously, and received a compound fracture between middle and lower third of leg. No splint on when received. Large, ragged wound over anterior and inner surface, through which the lower fragmina protruded for an inch. The anterior tibial muscle was caught between the bone-ends. Behind the upper fragmina, which was made to protrude, a large bone fragment, one inch long, was removed.	No rise of temperature. Discharged to her home December 26th. Still some looseness at that time and plaster cast was reapplied.
11 Nov. 30, 1891	Pat Flaherty,	21	Miner.	Injured at Niagara tunnel by blasting, on November 28th, producing comminuted and compound fracture of the tibia and fibula and diffuse laceration of skin, subcutaneous tissue, muscles, and rupture of posterior tibia artery. Wound filled with dirt and particles of stone. Ten large splinters removed, leaving a gap two inches long between the bones. The bellies of all the muscles except tibialis anticus peroneus longus and soleus pulpified for several inches and removed. Arteria tibialis postica doubly ligated	Died on the sixth day of delirium tremens. All wounds found agglutinated or healed. A large organizing blood-clot was found between the bones and muscles. Not a trace of pus.

DISCUSSION.

Dr. Lewis S. Pilcher, of Brooklyn: No branch of surgery illustrates more thoroughly the necessity for antiseptic work than that of compound fractures. The author has suggested that the chapters in our works on surgery, relating to compound fractures, should be rewritten; they are being rewritten, but even after being entirely rewritten, I doubt whether it will be the experience of all to obtain as good results as Dr. Mynter has recorded. A case of compound fracture may be regarded as having been treated successfully when the local results have been good and there has been no systemic disturbance, although there may have been a little pus in the wound. In the past three or four years they had in a Brooklyn hospital forty or fifty cases of severe compound fractures all of which terminated favorably, without any serious septic involvement; the principles of cleansing, drainage, and immobilization had been carried out. It was the *condition of the hospital* which gave the excessive mortality before Dr. Mynter became connected with it, and in other hospitals before thorough cleanliness and antisepsis had been applied. It is also to be remarked that in cities the cases pass through other hands before they reach the hospitals. The first dressing is important, and is made by the ambulance surgeon; nowhere is there greater need for reform than in the ambulance service.

Dr. J. H. Packard, of Philadelphia: The surgeon should always aim at ideal results and he can get them oftener than Dr. Pilcher seems to think. The failure in the treatment of compound fractures in the past has been due to sealing up of the small wound in the skin; it should rather be enlarged, and all pockets, though no larger than the end of one's little finger, should be opened up freely, and drainage and cleanliness established. If one would have a fistulous orifice remain open he need only leave a small cavity within where pus can collect. I think the plaster-of-Paris splint objectionable because it will at some time involve disturbance of the leg; it does not permit of inspection of the wound, and after shrinkage following swelling it will not render the limb immobile. I prefer the Russian felt splint.

Dr. Herman E. Hayd, of Buffalo, said he had been able to follow some of Dr. Mynter's work described in the paper, and had been impressed by the simplicity of the treatment. It consisted in converting a wound of serious form into a simple one. Bruised and devitalized tissues were removed—tissues of a kind best calculated to harbor bacteria and poisonous products. There was a great deal of satisfaction in watching and caring for these cases when one recalled the amount

of anxiety and trouble which they caused a few years ago. Formerly the dressing was renewed every day; now perhaps not at all unless the temperature chart indicated the necessity for it.

Dr. Mynter: There are three points which I desire to make clear: 1, That a compound fracture is a contused and lacerated wound; 2, That this can be changed by operative measures into a simple incised wound; 3, That one can, by carrying out common surgical principles, get union by first intention without pus. Regarding Dr. Packard's objection to the plaster-of-Paris dressing, I have made it very thin so that it can be readily cut through with a pair of scissors. The dressing includes the knee and ankle, and consequently, although there may be shrinkage of the soft parts after swelling, this does not apply to the irregular outline constituted by the bones of the joints. The plaster-of-Paris bandage does, therefore, maintain immobility. As to the fault in the past being in the hospitals rather than the surgeons, Volkmann's clinic was once one of the worst in the whole of Germany; about all cases of compound fracture treated there ended fatally until he introduced antiseptic treatment. Trendelenburg obtained some of the most beautiful results in one of the worst hospitals. In the hospital at Buffalo, sixteen consecutive cases of compound fracture had, under the care of one surgeon, died; and sixteen consecutive cases lived, under the care of his successor. Was it the hospital or the man in that case? Regarding the first dressing, it is of no special importance, for no hospital surgeon will rely on a dressing applied by the ambulance surgeon, who is always a young and comparatively inexperienced man. I would never allow a case of compound fracture or incised wound to remain over night in the hospital with the bandage on that had been applied before admission.

IX. The Question of Early High Amputation in Senile Gangrene.

By CHARLES A POWERS, M.D.,
NEW YORK.

I am able to adduce but a single case in illustration of the topic which I present for the consideration of the Society, and that case a fatal one. It serves, however, to emphasize this point, to which I invite your attention, that in cases of senile gangrene, involving the lower extremity, early recourse should be made to amputation

through the thigh when the process has extended from the toes to the foot.

Mr. D., a heavily built man, sixty-seven years of age, was referred to me on September 15, 1891. He had suffered from syphilis in early manhood, but had had no late manifestations. He had been a moderate user of alcohol. Four months before seen he had been troubled with slight itching on the dorsum of the right foot, and one month previously this had given place to dull, undefined pains in the right leg and foot—slight at first, but later so severe as to prevent locomotion. Areas of diminished and lost sensation had in turn appeared, and when coming under observation the entire foot was without surface sensibility—livid, cold, its dorsum covered with occasional blebs. The leg, as far up as its middle, showed scattered areas of insensibility and patches of a lightish purple mottling, there being, however, no distinct line of demarcation. No evidence of recent or old injury to the toes or foot could be found.

There was no pulsation to be felt in either of the tibials, in the popliteal, or in the femoral at Hunter's canal. The latter vessel pulsated beneath Poupart's ligament. The heart-sounds were weak, but otherwise normal. The urine was negative upon examination. The continuous pain had tended to weaken the patient's general strength; he had developed a slight daily fever. The patient seemed to think that there had been but slight change, if indeed any, during the preceding ten days.

He was removed to the New York Cancer Hospital, and there, thirty-six hours after I first saw him, amputation was made, under chloroform, through the middle of the thigh, by antero-posterior flaps, care being taken that these should not contain an undue amount of tissue.

The femoral artery was thickened, calcareous, and occluded by a firm clot. It projected in the wound almost as would a piece of bone, did not pulsate after removal of the rubber bandage, which had been lightly placed about the thigh at the upper third, and was secured with heavy catgut. Occlusion did not, however, extend to the other vessels of the stump, all of which seemed competent. Bleeding was carefully checked, and the stump closed, drained, and dressed in the usual manner.

The operation was followed by no shock. Twenty-four hours afterward, however, respiration became labored. Physical examination revealed hypostatic pneumonia over both lungs, below and behind, and to this the patient succumbed at the end of the third day.

A complete autopsy was not permitted. I was allowed, however, to examine the stump, and found it the seat of complete primary union. The flaps were agglutinated throughout, there were no areas of malnutrition, and there was no pus.

It may, perhaps, be said that a fatal case is poor support of an argument in favor of an exceptional line of treatment. To this one may reply that the pulmonary complication which this patient developed might have accompanied low as well as high amputation,

and that the condition of the stump was eminently satisfactory, while it is more than questionable whether an equally good local state would have followed amputation at a lower point.

Proposition to resort to early amputation through the thigh in cases of gangrene due to arterio-sclerosis, was first[1] seriously made by Jonathan Hutchinson, who presented, in 1883, an exceedingly clear and logical argument before the Medico-Chirurgical Society of London,[2] calling attention to the fact that amputation, in obstructive gangrene due to arterio-sclerosis, has been largely discountenanced because followed by sloughing of the stump, and urging that this only takes place when the part is removed too near to the disease.

When amputation is done at a low point, the condition of the vessels will rarely be found to be such as to admit of repair; gangrene of the stump will usually occur immediately, and place the patient's life in much more danger than before operation. By "amputation high up," Hutchinson means that in the case of gangrene of the foot, the amputation should be made above the knee, and in that of the hand at or near the shoulder-joint.

In gangrene due to arterial calcification, the interference with the blood-supply is usually greatest in the distal part of the arterial system, and is of such nature as to be steadily on the increase. Hence the hopelessness of improvement and the great danger of advance. Hutchinson adduces a number of cases in which he successfully amputated through the lower third of the thigh for gangrene of the foot, and avers that the procedure is not attended with much danger, even in advanced years, and with extensive calcareous degeneration of the arteries. He has never seen secondary hemorrhage in these cases, nor has he encountered difficulty in securing the vessels at the time of the operation.

In this connection I beg to draw your attention to a most instructive paper by Heidenhain,[3] who, in September, 1891, published the cases of senile gangrene of the lower extremity, which he had seen in the clinic of Küster at the Augusta Hospital in Berlin.

Israel[4] arranges the conditions under which spontaneous gangrene occurs under three heads: 1. Imperfect access of normal blood to

[1] Mr. Hutchinson accredits earlier commendations of the measure to James.

[2] Medico-Chirurgical Transactions, 1884, vol. lxvii. p. 91.

[3] Deutsche medicinische Wochenschrift, 1891, p. 1087.

[4] Berl. klin. Wochenschrift, 1882, p. 705.

the affected parts; 2. Perfect access of abnormal blood; and, 3. Imperfect access of abnormal blood. In the first category belong the cases of senile gangrene caused through arterio-sclerosis or obliterating endarteritis; in the second, those of gangrene of the tip of the nose, lips, toes, etc., after acute infectious disease, while in the third class, one must number a great part of the cases of diabetic gangrene, inasmuch as Israel found arterio-sclerosis in no less than 13 out of 20 diabetic patients who consulted him.

Heidenhain includes, then, cases of gangrene in diabetes, as well as those in which the urine was free from sugar, citing 25 in all; 11 with diabetes and 14 with simple arterio-sclerosis. Thirty primary amputations were carried out on these 25 patients, three of whom demanded double amputation, and one triple. Besides these 30 primary amputations there were 10 secondary operations, the latter made necessary by gangrene of the stump after a primary amputation. Heidenhain says: "Küster had at first contented himself with the simple forms of interference or low amputation. The constant occurrence of gangrene in the amputation wound, however, in these cases, regularly compelled further high amputation. So that Küster is led, through his practical experience, to amputate at or above the knee in every case in which the gangrene has extended from the toes to the dorsum or sole of the foot." Analyzing these cases, we find that four times, in circumscribed gangrene of a toe, Küster disarticulated, but in every instance gangrene of the flaps occurred and extended to the back of the foot. Lisfranc's operation was secondarily carried out on one of these patients; he developed further gangrene, and died of sepsis. A second was further amputated at the knee, and again higher up, the latter operation accomplishing the cure. Both of the others were healed only after amputation through the femur.

In 3 cases of primary amputation through Chopart's joint the gangrene progressed in 2, and required femoral amputation. Primary amputation through the leg was employed six times. One case died from gangrene of the flaps and sepsis, 3 were saved by amputation through the thigh, the other 2 were healed only after gangrene of the flap edges and necrosis of the sawn surface of the stump.

Of these 13 low, primary amputations, then, only 2 went on to healing—these in leg amputations. Two patients died of gangrene

of the flaps and sepsis; the remainder, 9, were saved by secondary amputation at or above the knee.

Of the 17 primary amputations through or above the knee-joint 9 were cured, while 8 died of diabetic coma or heart-weakness. Of the 10 secondary amputations here all recovered. Separating, now, the diabetic from the non-diabetic cases, we find that of the diabetic patients 6 were cured while 5 died,[1] and of the 14 patients with simple senile gangrene, 9 were cured, 5 dying. The fatal result was due to gangrene of the flaps and sepsis in 2 cases (one Lisfranc's amputation, one through the leg, both in the early days of antisepsis). In 1 case a man of eighty years died of heart failure at the end of nine days; one man of seventy-eight years succumbed to hypostatic pneumonia, and a man of fifty-two years died at the end of nine days with myocarditis, nephritis, and ascites. The list shows that through the high amputation at or above the knee all patients were saved who were not severely afflicted with some general disease.

I cannot doubt that some of you will adduce isolated cases in which the so-called expectant treatment or operation near the seat of the disease has resulted in cure, yet I must ask you to endeavor to recall, as well, those in which this plan has been followed by a secondary high amputation or by a fatality, and in conclusion I beg to quote this sentence of Heidenhain's:

"So long as the gangrene be confined to one or two toes one may wait and abstain from other than general antiseptic treatment with high position of the limb, allowing the part to be spontaneously thrown off. If the process extends, however, to the back or sole of the foot, one should amputate above the condyles of the femur. Amputation below the knee is almost always followed by extensive gangrene of the flaps, and brings the patient in danger. High amputation is indicated, then, when the gangrene progresses, even though the patient be without fever. If one waits and operates only after secondary suppuration and fever are present, the prognosis will be much less favorable."

[1] It is worthy of note that 3 of these 5 fatal cases were in patients whose urine was both saccharine and albuminous. Of 4 patients whose urine contained albumin, in addition to sugar, only 1 was cured—a man in whom the amount of sugar, as well as of albumin, was small.

X. Aluminium in Orthopædic Apparatus.

By S. R. MORROW, M.D.,
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The design of this brief paper is to bring before the profession the advantages presented by the new metal, aluminium, in the construction of orthopædic apparatus. For purposes of comparison and illustration I have taken the very simple form of traction hip-splint devised by Dr. V. P. Gibney, of New York, much used in the out-patient service of the Polyclinic in that city, and known as the Polyclinic splint—an apparatus I constantly use in our orthopædic hospital here in Albany—the Child's Hospital. This instrument is made of bar-steel, and consists of a side-bar bent to a right angle under the foot, and having a steel pelvic band, about two-thirds the circumference of the body at the iliac crests. A small semicircle of steel, attached to the upright, grasps the middle of the thigh so as to steady the limb. The foot-piece is shod with sole-leather, and straps are fastened to it to take hold of buckles at the lower end of the adhesive plasters on the leg, as in all the forms of traction-splint. There being no ratchet movement, the instrument is much cheaper than the Davis-Taylor splint, although not much lighter.

I have had an exact duplicate made in aluminium of one of these splints, and in submitting them to your inspection, I am convinced that a very favorable opinion will result as to the merits of the new metal, which is now for the first time employed in such an apparatus.

The principles involved in the construction of hip-joint splints are so well established that one can hardly hope to add anything of importance. It is well known that, at a certain somewhat indefinite stage in the treatment of hip-joint disease, it becomes highly important to allow the patient to change from a state of rest in bed, with weight and pulley traction, or with some sort of fixation splint, to a condition of greater bodily activity, with locomotion. Fixation of the diseased joint must still be maintained, and the most practicable method of securing it is by the use of the metal long hip-splint, the Davis-Taylor splint, or some modification of it, such as this Gibney splint.

The advantages of this change in the treatment need not be dwelt on. The great disadvantage in the case of these splints is in their weight. The weakened and wasted muscles of the little sufferers are barely able often to drag around their unencumbered limbs, and, when handicapped by the ordinary heavy splints of iron or steel, children will often prefer to remain quiet, and thus the very benefit we are aiming at is lost. If, then, any equally strong and effective substitute can be provided, which shall be as durable and yet much lighter, a great boon will be conferred. Such a material, I believe, is at hand in the new metal, aluminium—"the metal of the future."

It might prove very interesting to discuss at length the extraordinary properties and prospects of this wonderful new metal, of which "every brick in our houses contains two or three pounds," but the purpose and limits of this paper will not permit that. I may, however, recount a few points. Aluminium, so called from its oxide, alumina, which in turn gets its name from being the base of alum, is a bluish-white metal, very malleable and ductile, and, after silver, copper, and gold, the best conductor of electricity. It is two-fifths more abundant than iron (7.81 per cent. of the earth's crust being of aluminium and 5.46 per cent. of iron), and is only exceeded in quantity by two elementary substances—oxygen and silicon.

Mr. Joseph W. Richards, of Lehigh University, has written a work of 500 octavo pages on aluminium, which is the most complete in any language. A few of his facts may be of interest. The metal was discovered in 1827; the first piece or ingot of it was made in 1854. Various processes have been employed from time to time for making it, but they have all been pretty generally superseded by the electrolytic method. The cost of production has been so reduced that it can be purchased for fifty cents a pound, whereas in 1855 it cost ninety dollars a pound, and only yesterday (February 3, 1892) the daily papers announced the formation of a company in Indiana which proposes to manufacture the metal so as to sell it for twenty-five cents a pound. There are six establishments now producing pure aluminium in this country and in Europe, and four producing aluminium alloys. It is probable that from one to one and a quarter tons of pure aluminium is being made daily, and perhaps as much more in alloys.

The future of this metal will depend, next after the cost of pro-

duction, on its remarkable physical properties, of which the most striking is its lightness. As Prof. Richards says: "Aluminium being only two and one-half times as heavy as water (having about the same specific gravity as quartz, crystal, or porcelain), while iron is seven and a half times, copper nine times, silver ten and a half times, and gold nineteen times as heavy. An aluminium frying-pan would only be one-third as heavy as an iron one; an aluminium stew-pan two-sevenths as heavy as a copper one; an aluminium watchcase hardly one-seventh as heavy as a gold one."

Besides its lightness, its next most valuable property is its resistance to oxidizing and strong corrosive agents, so that it does not rust. Sulphurous vapors have not the slightest blackening effect on aluminium, while we all know how unsightly they render silver. Again, the acids and discharges of the body have no effect on this metal, so that all sorts of surgical instruments may be made of it with the greatest satisfaction as to cleanliness, as well as suture wire, urethral sounds, and drainage-tubes, to take the place of glass, with no risk of breakage. Being unaffected by pus, it can be seen that it will have a great field of usefulness. "It will never become the universal metal that iron is, but there is no doubt that it will largely supplant copper, tin, pewter, zinc, Britannia metal, brass, German-silver, and silver."

In its application to the manufacture of orthopædic apparatus, I am convinced that this metal has a great future. The two most important questions in this regard relate to its cost and its capacity to supplant steel and iron in the matter of strength and rigidity. As to the latter point, it is by no means equal to iron or steel, but it has about the strength of cast brass, and is sufficiently strong to sustain the weight of an ordinary child, as in the form of a hip-splint. Additional strength can be gained in the case of large children or adults by increasing the diameter of the bars of metal used, which even when much thicker than the one here presented, will still be so light as to tax the patient's powers very little.

The steel splint here shown weighs thirty-five ounces, while the aluminium splint weighs but fifteen and one-half. The workman who made this apparatus for me had never seen the metal before, and knew nothing of the methods of working and soldering it, and so had to use some iron nuts and copper rivets about the splint, thus adding quite a little to its weight; for the weight of aluminium in the splint is only nine and a half ounces, the other six being

made up by the weight of the iron nuts, leather covering of the pelvic belt and foot-piece, etc. I am sure that a bar of metal two-thirds the width and thickness of this one could have been used, and yet have been sufficiently strong to bear the weight of a little child, and that, by having the splint cast wholly of aluminium after a special pattern, the weight of such a splint need not exceed ten or eleven ounces. It is quite possible that an alloy of aluminium, say with tin, will give all that we can ask in point of strength without losing anything in lightness. As to the cost, while this particular splint has cost twice as much as a steel one, owing to the great amount of time consumed in learning how to handle the metal (the cost of which was only $1.25), my instrument-makers, Messrs. Koelsch & Shafer, of this city, assure me that with a little more facility in the manipulation of the metal, to be gained by further experience with it, they are convinced that such apparatus can be made as cheaply, if not more cheaply, than a steel splint.

XI. Phelps's Operation: A Report on the First Four Cases Operated Upon for Talipes Varo-equinus in 1879.

By A. M. PHELPS, M.D.,
NEW YORK.

Nearly thirteen years have elapsed since first I performed the operation of open incision for club-foot. The first cases were reported to the New York State Medical Society in a paper read in 1881. These three cases I have from time to time examined, together with others operated upon at that time.

The first case was that of a little girl, six and a half years of age —congenital talipes varo-equinus. Fig. 1 is from a miserable tin-type taken before the operation was performed. In the *Transactions* for 1880 I find the following report: "The feet were very rigid, the inner side very much shortened, and described a sharp curve from the heel to the great toe, which rested upon the inner side of the tibia when the weight of the body was upon them. The attempt at walking had produced large bunions on the dorsum of the feet, which were very much inflamed." The head of the astragalus was sub-luxated forward, and the limbs were very much atrophied.

I had operated upon these feet very extensively, and they had relapsed. Under an anæsthetic, and assisted by Dr. Farnsworth, I made an incision in front of the ankle-joint, extending across the inner side and two-thirds the distance across the sole of the foot through the skin and cellular tissues. Each contracted part was now carefully divided, as it showed itself when the parts were put upon the stretch, by extending the foot.

Fig. 1. Fig. 2. Fig. 3.

After the completion of the operation, it was found that the incision had been carried down to the bone in both feet. The artery and nerve were accidentally divided in the right foot, but in the left they were carefully guarded.

This case was treated with the brace which I devised for the purpose, and at the end of fourteen weeks the feet were found perfectly straight. Fig. 2 was taken from a photograph made at the time.

I examined this case seven years after the operation, and made a photograph, from which Fig. 3 is taken. The feet were quite perfect, as the photograph shows; perfect motion in all the joints;

power of flexing the toes; no sensitive scar; a good arch in both feet; atrophy of the calf had not increased. This case always required to wear a slight support, because the peronei muscles never regained their tone. I believe this to be a case of congenital paralytic talipes varo-equinus.

The second case, operated upon within a few days after, and reported in my paper in 1881, was a success; but, owing to the absolute worthlessness of the child's parents, I learned that the case relapsed after it went from under my eye.

The next case was a little boy, three and a half years of age, from Saranac, New York, born with double talipes varo-equinus. He had been operated upon by subcutaneous tenotomy, and had been treated with splints and braces from the time of his birth by a very distinguished surgeon, with a result as seen in Fig. 4, made from a photograph taken at that time. I performed the same operation in this as in the foregoing case. After four weeks the feet were again photographed. Fig. 5 is made from the photograph.

FIG. 4. FIG. 5. FIG. 6. FIG. 7.

This boy was treated with the plaster-of-Paris shoes, and during the year following a stiff counter was put in an ordinary shoe. When nine years of age (five and a half years after the operation)

I presented him at the New York State Medical Society. Fig. 6 is taken from a photograph made at that time.

The feet in almost every respect were normal. There was slight limit of motion at the ankle-joint. When the boy was fourteen years of age, last summer, I again had photographs taken of his feet. (See Fig. 7.) The result is so perfect that no one would dream that he had ever had club-feet, even when he walks with his shoes off.

Case IV. was a little girl, three years old, from Norwood, N. Y., with the severest form of congenital talipes varo-equinus that I had ever seen. I performed the same operation. Fig. 8 is from a photograph taken before the operation; Fig. 9, the feet three weeks after, showing the scarring; Fig. 10, one year after; and Fig. 11, from a cast made seven years after the operation. The result in this case is almost perfect power of motion. The motion of the toes is slightly lost. There is good motion in all the joints, and the child walks with scarcely a limp.

Fig. 8. Fig. 9. Fig. 10. Fig. 11.

These cases were treated before I knew anything about antiseptic surgery, and, strange but true, the results are almost equally as good as in the cases upon which we are now operating, following rigid antiseptic rules.

The dressings employed in these cases were splints, which fitted imperfectly, causing considerable pain. The incisions were much

too long, and more tissues were cut than necessary. The change in the operation as then performed consists in making an incision com-

FIG. 12.

Specimen in the College of Surgeons, London, showing muscles and tendons in varus.

FIG. 13.

Specimen from the College of Surgeons, London, showing arrangement of tendons in varus.

mencing in front of the inner malleolus and extending one-third the distance across the sole of the foot, carried down to the neck of the

astragalus on its inner side. (Fig. 14.) Through this small wound the abductor pollicis, tibialis posticus tendon, the plantar fascia, the

Fig. 14.

Phillipson.

flexor brevis muscle, and long flexor tendons of the toe (Figs. 12 and 13), and finally the deltoid ligament—all its branches, if necessary—can be cut.

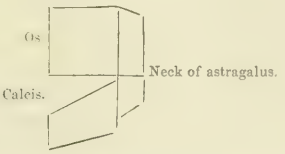
Fig. 15.

Incision under the skin for the ligament. (Phillipson)

Nothing will be gained by cutting the soft parts more extensively. This, of course, is done after subcutaneous tenotomy of the tendo Achillis has been performed. Great force is used to rupture the deep ligaments, and if the foot cannot now be drawn

to a super-corrected position easily, a linear osteotomy should be made through the neck of the astragalus. (Fig. 16.) If this fails, a V-shaped piece should be removed from the os calcis, the point of the V meeting the linear osteotomy. This failing, the removal of the cuboid and scaphoid is indicated. And, as a last resort, Pirogoff's amputation should be resorted to.

Fig. 16.



In one hundred and ninety-eight cases of severe club-foot, nearly all of which had either been operated upon or treated for years with braces, I have found it necessary in only twenty-two to perform osteotomy. *Osteotomy, including astragalus resection, ought never to be performed as a primary operation, for the following reasons:*

1. After the steps already described have been taken, osteotomy will be found unnecessary in from 80 to 90 per cent. of all cases.

2. There is a mortality of from 3 to 5 per cent. in primary osteotomies for the relief of club-foot.

3. The operation of removal of the astragalus on account of deformity in the neck of that bone should never be done, because it shortens the leg; and then linear osteotomy through the neck of the astragalus, and pulling the foot around to place, causes a gap in the neck of that bone which fills in with bone and remedies the deformity.

4. No surgeon can determine the amount of bone deformity until after the contracted soft parts have been divided. He can only give a likely guess.

5. The general results of this operation are as good as or better than any operation of osteotomy.

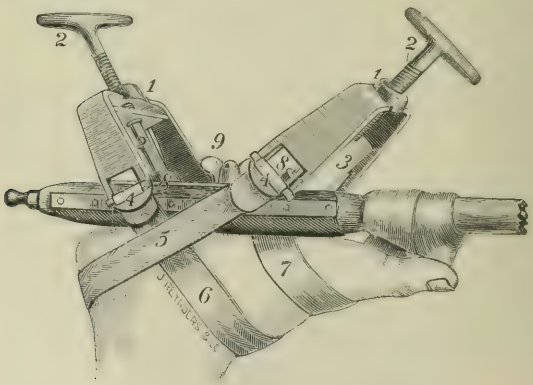
6. The cases operated upon by this method are not so likely to relapse as those in which osteotomy has been performed. (Fig. 19.)

In a large number of pathological specimens which I have in my possession the contraction and deformity of soft parts is out of all proportion to the deformity of the bone, and in two or three speci-

mens of very severe talipes varo-equinus but slight deformity exists in any bone, but rather a dislocation of all bones, one upon the other, and slight changes in their articular facets. Let us have a method for operating upon these cases. Do not tinker with a club-foot, performing a little operation and guess that you will complete the work with machinery, for, as a rule, such feet relapse.

An operation once decided upon, the foot should be super-corrected. Following this rule, *cut the parts which first offer resistance*, cutting in the order of those parts which first contracted when the deformity was produced, beginning with the tendo Achillis. The equinus should be overcome as far as possible, first, for the reason that the ligament, extending from the tibia to the os calcis, when short, which it is in about one case in ten, must be ruptured, and not cut, because the nerves and bloodvessels lie close to it. The foot can be used as a lever, and with the hand or with a machine (see Figs. 17 and 18) this ligament can be ruptured. If, as has

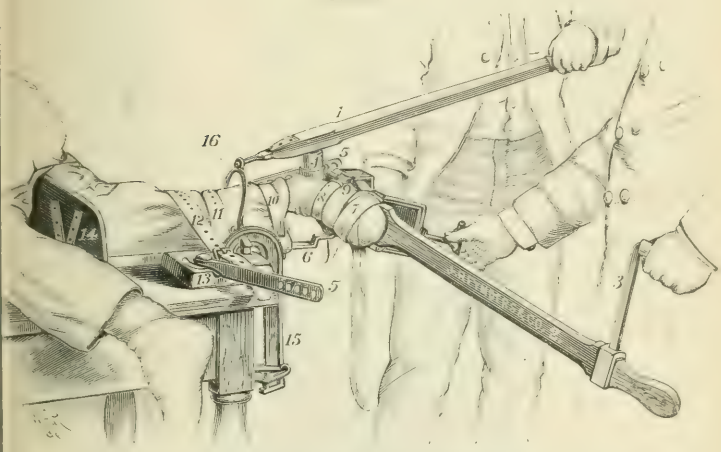
Fig. 17.



been advised by some, an open incision is first made in the foot, and it is so weakened by an open cut that a sufficient amount of force cannot be applied to rupture the ligament without doing injury to the foot, the equinus cannot be corrected, and a relapse must follow. After subcutaneous tenotomy of the tendo Achillis, *if the skin is found short*, make an incision, beginning in front of the inner mal-

leolus and extending at right angles with the foot, one-third the distance across the sole, and carry it down to the inner side of the neck of the astragalus. (Fig. 14.) Through this incision the tissues can be cut in the order already given.

FIG. 18.



Great force should be used after cutting each tissue. If the foot cannot now be placed in a super-corrected position, linear osteotomy with the chisel should be performed through the neck of the astragalus. (Fig. 16.)

If this fails, the next step is the removal of a V-shaped piece from the body of the os calcis, the point of the V meeting the linear osteotomy. (Fig. 16.) If this fails, remove the cuboid and scaphoid bones, which I have found necessary to do in two cases in adults.

It will be observed that the operation begins by manipulation, taking the various steps up to extensive osteotomy, and, in exceptional cases, Pirogoff's amputation may be resorted to as a last resort. If these steps are followed, osteotomy will be found necessary in only about 10 or 12 per cent. of all cases, and in one-half of these a simple linear osteotomy, the least severe of all the bone operations, will suffice.

There has thus far been no death following the operation of open incision. As I have already stated, the mortality from osteotomy, or from astragalus resection, is from 3 to 5 per cent.

Inasmuch as the open-incision method furnishes as good results as any operation known, is unattended with danger to the patient, and more than 90 per cent. of all cases are straightened without osteotomy, it certainly should be resorted to before osteotomy is attempted. Let us have a method, and then nearly all operations devised in surgery will have their legitimate place.

In the management of all cases of club-foot, begin with manipulation and fixed dressings, then subcutaneous tenotomy, open incision, and the various forms of osteotomy already enumerated. Thus you will see that the legitimate place for open incision *is between subcutaneous tenotomy and osteotomy.* This method has

FIG. 19.

Shows not an uncommon result following primary osteotomy. There has been a resection of the astralagus in one foot and cuneiform tarsectomy in the other. Photograph made of a case in the practice of an eminent European surgeon.

many advantages. It makes the operator master of the situation. He begins with the milder means; failing in one, he applies the next more severe, and so on until the foot is straightened. Another advantage of cutting the parts as they offer resistance, in their respective order, is that it prevents the operator from needlessly cutting tissue not deformed by contraction. The small incision

made does not injure the foot; the scar tissue is not sensitive; paralysis never follows. (Figs. 20 and 21.) Through this small wound all the soft parts contracted in varus can be easily cut.

FIG. 20.

Showing foot and scar after the operation. (Gerster.)

FIG. 21.

Showing foot and scar at fourth week.

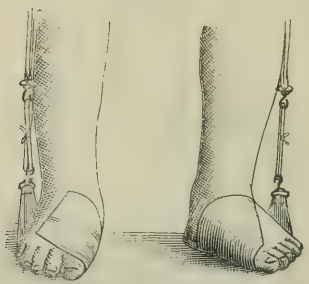
Osteotomy should never be resorted to as a primary operation—not until the soft parts have been lengthened. The foot must be shortened in proportion to the amount of bone removed, or in removing the

astragalus the entire limb will be shortened. It is not necessary to perform osteotomy in a greater percentage than ten, in all cases under the age of fifteen years.

To summarize my results up to the time of my reports made at the International Congress (I have operated upon 37 since reading that paper), I find that in 93 cases there were 161 operations performed, the average age being six and a half years; the average time of healing the primary wound was four weeks. There were 117 cases of blood-clot organization; 4 catgut; and 19 failures of blood-clot organization in 140 cases.

The duration of after-treatment was ten months (Fig. 22). The fourth month after operating the feet were all straight. I have,

Fig. 22.



Shows the hooks and plasters used in after-treatment with a pelvic band.

since reading that paper, learned that one case in the Mary Fletcher Hospital, Burlington, Vt., suffered from sloughing and necrosis from tight bandaging. The foot, however, was straight. Out of the 140 cases traced after one year, 10 cases were found relapsed, or partially so, from neglect. I will say that relapses, when they occur, take place during the first year after the operation, as a general rule.

There were performed 10 linear osteotomies, 5 linear osteotomies with cuneiform resection from os calcis or cuboid, and 2 linear or cuneiform osteotomies, together with removal of both cuboid and scaphoid bones, making in all 17 osteotomies.

These results vary but little from Dr. Kaptyn's, of Abcande, Amsterdam, who has kindly furnished me with statistics of 42 operations in 36 cases in Holland. In this series 34 were very

good, 1 materially improved, fair results in 6, and 1 still under treatment. In other words, good results were obtained in 36 feet, with useful feet in all the others, except 1, which is unknown.

I find, in looking over the literature on the subject, the following reported cases: Hoffe, 6; Schede, 20; Nunchen, 13; Oliva, 6; Postempski, 1; Schreiber, 11; Lowenstein, 2; Jones, 19; Roman, 3; Giordane, 1; Motta, 7; Volkmann, 21; Kirmison and Rochard, 7; Ambrose, 1; Phillipson, 3; Levy, 9; Kaptyn,[1] 42; Post, 2; Hamburg Medical, 1884, 12; Hingston, 4; the writer, 161; making in all, 342.

All the cases at the time of reporting upon them were good results. In no case did I find a sensitive scar, a flat foot, or paralysis following the operation. No considerable atrophy of the muscles of the limb followed the operation in any case; the motion of the toes was preserved in nearly all the cases. In those with loss of flexion of the toes, locomotion seemed to be as perfect.

In my series of 198 cases nearly all had already run the gauntlet of tenotomy and instrumental treatment, with a relapse in each case.

The table (see next page) comprises the 93 cases operated on up to the time of my reports made at the International Congress.

[1] This includes the cases of Professor Tilanus, Professor Korteweg, Dr. K nwer, Professor Sternson, Van der Hoeven, and Dr. Dunnewold.

No.	Age.	Form.	Wound healed in	Durat'n of after-treat-ment.	Result after four months.	Previ-ously operated on by	Blood-clot organization.	Remarks.
1	4 y'rs	Double	4 weeks	11 y'rs	Perfect	Tenotomy	...	A case of true congenital paralytic talipes varo-equinus.
2	3 "	"	3½ "	1 year	Relapse	"	...	Relapse from neglect.
3	6½ "	"	4 "	2 y'rs	Perfect	"		
4	8 "	Single	4 "	2 "	"	Mechanics	...	Wore braces five years.
5	5 "	Double	4 "	3 "	"	"		
6	14 mos.	"	3½ "	3 "	"	"		
7	13 y'rs	"	4 "	4 mos.	"	Tenotomy	...	Linear osteotomy.
8	9 "	"	4 "	3 years	"	"		
9	12 "	"	3½ "	2 "	"	"		
10	8 "	"	4 "	1 y'rs	"	"	...	Linear osteotomy.
11	15 "	"	4 "	1 "	"	"	...	Linear osteotomy and cuneiform resection.
12	17 "	"	5 "	1 "	"	"	Yes	Linear osteotomy and cuneiform resection.
13	10 "	"	3½ "	1 "	"	Mechanics	"	For four years wore braces.
14	7 "	"	4 "	1½ "	"	"	"	
15	19 "	"	5 "	6 mos	"	Tenotomy	"	Non-congenital.
16	6 "	"	4 "	1 year	"	"	"	
17	9 "	"	4 "	6 mos.	"	"	"	
18	2 "	"	3 "	2 y'rs	"	"	"	
19	5 "	Single	4 "	2 "	"	Plas. Paris	"	Relapse after one year; neglect.
20	4 "	"	4 "	1 year		Tenotomy	"	
21	7 "	"	4 "	1½ "	Fair.	"	No	Parents neglected him; poor.
22	2 "	Double	3½ "	1 "	Perfect	.....	Yes	
24	6 "	"	4 "	8 mos.	"	Tenotomy	"	Non-congenital.
24	9 "	"	4 "	6 "	"	"	"	
25	8 "	"	4 "	1 year	Good	"	"	
26	3 "	"	3½ "	1 "	Perfect	"	No	Partial relapse after one year.
27	5 "	Single	3 "	1½ "	"	"	Yes	
28	1½ "	Double	3	2 y'rs	"	.....	"	
29	13 "	Single	5 "	1 year	"	Tenotomy	"	
30	18 "	"	6 "	6 mos.	Good	Mechanics	"	Club-foot shoes for fifteen years.
31	10 "	Double	4 "	1 year	Perfect	Tenotomy	"	Linear osteotomy.
32	9 "	"	5 "	6 mos.	"	.....	"	Linear osteotomy.
33	2 "	"	3½ "	1 year	"	Tenotomy	No	
34	22 "	Single	5 "	4 mos.	Good	.....	Yes	Linear and cuneiform osteotomy.
35	1 "	Double	4 "	2 y'rs	Perfect	Tenotomy	"	
36	31 "	Single	5 "	6 mos.	"	"	"	Linear and cuneiform osteotomy, removal of cuboid and scaphoid.
37	9 "	Double	4 "	1 year	"	"	No	Non-congenital.
38	4 "	"	3½ "	1½ "	"	"	Yes	
39	3 "	"	4 "	3 mos.	"	"	"	Relapse after one year from neglect.
40	5 "	Single	3½ "	4 "	"	"	"	
41	2 "	"	4 "	6 "	"	"	"	But relapsed after one year from bad management.
42	3 "	"	4 "	7 "	"	"	"	
43	5 "	Double	4 "	1 year	Good	.....	No	
44	8 "	"	5 "	6 mos.	"	.....	"	
45	3 "	"	4 "	3 "	"	Mechanics	Yes	Relapsed from neglect one year later.
46	12 "	"	5 "	4 "	Perfect	"	"	
47	16 "	"	6 "	6 "	Good	.....	"	Linear osteotomy, cuneiform resection.
48	4 "	"	3½ "	1 year	"	.....	"	
49	5 "	"	4 "	4 mos.	Perfect	Tenotomy	"	
50	13 "	"	5 "	6 "	"	"	"	Non congenital.
51	11 "	Single	4 "	1 year	"	"	"	
52	9 "	Double	5 "	2 mos.	Good			
53	8 "	"	4 "	3 "	"	Tenotomy	Yes	
54	5 "	"	3½ "	4 "	Perfect	"	"	
55	7 "	"	4 "	5 "	"	.....	"	Non-congenital.
56	2 "	"	4 "	3 "	"	Tenotomy	No	
57	3 "	"	5 "	4 "	"	"	Yes	
58	7 "	Single	4 "	8 "	Good	.....	"	Relapse partial after one year, from neglect.
59	7 "	"	4 "	1 year	"	.....	"	
60	2 "	"	3½ "	6 mos.	"	Tenotomy	"	
61	5 "	Double	4 "	1 year	Perfect	"	"	
62	16 "	"	6 "	4 mos.	Good	"	"	Linear osteotomy.
63	9 "	"	4 "	2 "	"	.....	No	
64	11 "	Single	5 "	3 "	"	Tenotomy	Yes	Linear osteotomy.

No.	Age.	Form	Wound healed in	Durat'n of after-treatment.	Result after four months.	Previously operated on by	Hæmolytic organization.	Remarks.
65	21 y'rs	Single	7 weeks	6 mos.	Good	Tenotomy	Yes	Linear osteotomy, cuneiform resection, removal cuboid and scaphoid; slough from tight dressing
66	4 y'rs	Double	4 weeks	1 year	Perfect	Tenotomy	Yes	
67	8 "	"	5 "	1 mos.	"	"	"	Linear osteotomy.
68	7 "	"	5 "	3 "	"	"	"	
69	4 "	"	4 "	5 "	"	"	"	
70	4 "	Single	4 "	8 "	"	"	"	Linear osteotomy.
71	7 "	Double	4 "	1 year	Good	"	"	Relapse after one year from neglect.
72	6 "	"	4 "	3 mos.	"	.....	"	Partial relapse from neglect.
73	9 "	"	5 "	4 "	"	.....	"	
74	13 mos.	"	4 "	6 "	Perfect	Tenotomy	"	
75	17 y'rs	Single	6 "	4 "	Good	"	"	Linear osteotomy, cuneiform resection.
76	5 "	Double	5 "	8 "	"	"	No	
77	8 "	"	5 "	1 year	"	.....	"	
78	12 "	"	5 "	6 mos.	Perfect	Tenotomy	Yes	Linear osteotomy.
79	3 "	"	4 "	4 "	"	"	"	
80	5 "	"	4 "	6 "	"	"	"	
81	3 "	"	4 "	3 "	"	"	"	
82	6 "	"	5 "	4 "	"	"	"	Non-congenital.
83	8 "	Single	5 "	1 year	"	"	"	
84	3 "	Double	4 "	3 mos.	Good	Mechanics	"	Club-foot shoe.
85	11½ "	"	8 "	4 "	"	"	"	Sloughing from tight dressing.
86	1 "	"	4 "	2 y'rs.	Perfect	Tenotomy	"	
87	7 "	"	5 "	1 year	"	.....	"	
88	2 "	"	3½ "	6 mos.	"	Tenotomy	No	
89	6 "	"	4 "	1 "	"	"	Yes	
90	16 "	Single	6 "	6 "	"	"	"	Linear osteotomy.
91	9 "	"	4 "	3 "	"	"	"	Catgut dressing in wound.
92	4 "	Double	4 "	4 "	"	"	"	Catgut dressing in wound.
93	6 "	Single	5 "	1 "	"	"	"	Catgut dressing in wound.

The word "Perfect," used in the above report, signifies a straight and useful foot, either toeing straight ahead or out, with normal functions fairly well preserved.

The words "Good" and "Fair" signify in-toeing of foot, with congenital defect either in the ankle-joint, tibia, or muscles, but useful feet, walking on plantar surface.

NOTE.—Thirty-seven cases have been operated upon since the arranging of the foregoing table. It was found necessary to perform osteotomy in five cases. 198 operations; 22 osteotomies.

DISCUSSION.

DR. WILLY MEYER, of New York: The method described by Dr. Phelps possesses a marked advantage in that it allows of correction of the deformity by a comparatively simple operation, and should the first step fail, further steps may yet be resorted to and prove successful which are much less severe and dangerous than extirpation. My own experience with this method has, however, been limited to one case, but in that instance it proved extremely satisfactory. Although the deformity had existed for sixteen years, yet correction was per-

fectly practicable by hand after simply incising the soft parts. I may add that the treatment of congenital club-foot should commence with birth; the mother should keep up manual correction, and by so doing the necessity for any kind of operation will in most cases be avoided. But if the case should go on until it reaches the orthopædic surgeon, I believe the method advocated by Dr. Phelps will be the one which will be resorted to in the future.

Dr. Herman Mynter, of Buffalo: I agree with Dr. Meyer, that it is desirable to begin the treatment of varo-equinus early and stick to it, but it is almost impossible to get even sensible mothers to bring the foot back into place and keep it there. I have recommended manual correction to mothers many times, but the result has been almost invariably that they have after some time brought the patient back with the foot in a position calling for an operation, and in this class of cases the open incision practised by Dr. Phelps is a good method. The object is to lengthen the inner margin of the foot and shorten the outer one, and if this can be accomplished by the open incision it is a good method; but in some cases I have found correction still impossible, and have been obliged to make osteotomy on the outer side of the foot at the same time. I think Dr. Phelps deserves a great deal of credit for keeping this matter before the profession.

Dr. Phelps: I might offer an apology to the profession for bringing this matter before it every year, but I have found it necessary for the reason that only the past two years has the profession begun to really understand what I meant at the time when I first wrote upon it. Regarding early correction by manipulation and without incision and osteotomy, this would be possible if it were applied intelligently. The open incision has its place; it is wrong to resort to it or to osteotomy where correction can otherwise be made.

To go on and do osteotomy in the first place, when open incision of soft parts alone would answer the purpose, would be as sensible as to ligate the femoral artery to stop hemorrhage from the toe.

XII. Intra-venous Saline Infusion for Relief of Shock and Acute Anæmia.

By LEWIS S. PILCHER, M.D.,
BROOKLYN, N. Y.

In bringing the subject of intra-venous saline infusions before the profession again, I am aware that the merit of novelty does not attach to it. The conditions of the circulation which render its practice valuable have been thoroughly studied and are well established; the practical results of its application have been fully demonstrated, and the technique of its practice is simple and well understood. Nevertheless I am persuaded that the recourse to such infusions is not as frequent as it might be with advantage to patients suffering from the shock of injury and the loss of blood; that the possible difficulties that attend its practice are not infrequently exaggerated in the minds of practitioners; and too often it is regarded as one of the rarer resources at the command of surgeons in great hospitals rather than one of the possible helps easily at the command of the general practitioner.

For these reasons I have ventured to report the following cases from recent personal experience, that if possible they may serve to renew interest in these infusions and again emphasize their value and practicability.

Rapid hemorrhage, when sufficient in amount to compromise life, produces its harmful effects, not by the reduction of the amount of the vital elements of the blood in the vessels below a point sufficient for maintaining life, but by so reducing the pressure of blood within the vessels as to render its adequate circulation impossible. The dominating indication is to quickly restore the volume of the circulating fluid to that point which will make possible the continual action of those forces by which its continual flow through the vascular channels is carried on. It is, therefore, now one of the accepted tenets of physiology, to which the labors of many have contributed, that, in efforts to resuscitate those moribund from hemorrhage, the essential requirement is to fill the elastic tubes of the vascular system with a certain amount of fluid, not necessarily blood, and that all the benefits derivable from blood transfusion

may be obtained by the simple device of infusing into the veins a solution of common salt.

In cases of injury that present themselves to the surgeon in actual practice varying degrees of shock and hemorrhage are likely to be combined. I would divide them roughly into three classes:

1. Those in which the effects of hemorrhage predominate.

2. Those in which hemorrhage and shock are both present in marked degree.

3. Those in which shock predominates.

Of the first class I will recite but one case in brief outline, as follows:

Case I.—Male, aged thirty-seven years. Suicidal gash of throat. Profuse hemorrhage. When received for treatment, was pulseless, voiceless, unconscious, moribund—no reaction to heat and hypodermic administration of stimulants. At end of forty-five minutes infusion into radial artery of twelve ounces of salt solution. Immediate return of pulse; progressive improvement; subsequent amenability to ordinary stimulants. Rapid and complete recovery.

As to the value of infusion in the second class, I present the following examples:

Case II.—Male, aged twenty-two years. Pelvis crushed by a falling bank of earth. Fractures of pelvic bones; laceration and extensive blood infiltration of soft tissues of pelvis; laceration of urethra; median perineal section; supra-pubic cystotomy; free counter-openings into pelvic tissues for drainage in perineum.

Patient developed symptoms of profound shock, combined with those of acute anæmia, accompanied by restlessness and thirst; surface of body cold, pulse too rapid and strong to be counted. Continuous and uncontrollable capillary oozing of blood from his wounds.

Twenty ounces of saline solution infused into the median basilic vein. Immediate improvement in his pulse and general condition followed. But after some hours the good effects of the infusion seemed to have become exhausted. The heart's action again became feeble and rapid, and restlessness and thirst reasserted itself. The capillary oozing, however, had now become checked. Hypodermics of morphia, atropia, digitalis, and strychnine, and of whiskey, began to manifest power to steady and sustain the heart. Renewed improvement declared itself, which from this time steadily progressed. His wounds were healed, his urethra restored, and an absolute recovery secured.

Case III.—Female, aged seventeen years. Operation for removal of multiple tubercular adenomata of neck, mass filling right side of neck from mastoid process to clavicle. Operation prolonged by reason of extensive periglandular thickenings of the connective tissue and the cheesy degenera-

tion of many of the glands. Near the close of the work, while traction was being made at the root of the neck to expose a gland in the supra-sternal fossa, a flood of venous blood suddenly inundated the wound, and added the effects of its rapid loss to the previously existing shock and anæmia. The depression was profound and threatening of speedy dissolution. While the lateral tear in the internal jugular vein (for such proved to have been the cause of the hemorrhage) was being secured, my assistant proceeded to infuse a saline solution into the median basilic vein. The quantity of solution injected was regulated by its effects, and the injection was continued until the normal volume of the pulse was restored, three pints having been thrown in before the desired effect was obtained. This full beneficial effect of the infusion soon began to wane, and the ordinary symptoms of severe shock reasserted themselves after an hour or so. She responded now, however, to the usual treatment for such a condition; by the succeeding day she had fully rallied, and she passed on to an uneventful convalescence, none the worse for her jugular accident.

Case IV.—Female, aged forty-six years. Exploratory incision to determine character of a doubtful knee-tumor. Abundant hemorrhage, with demonstration of the existence of a vascular sarcoma of the lower end of the femur. Immediate amputation through middle of thigh. Much immediate shock, with subsequent gradual aggravation of all symptoms. At end of four hours patient pulseless, unconscious, moribund. Infusion into median cephalic vein of one pint of saline solution. Immediate revival. Able to receive and converse with friends for some hours. Gradual relapse into condition of depression, against which the usual stimulating remedies were powerless. Final death.

I might add other examples to these, illustrating the happy effects of intra-venous saline infusions in the two first classes of cases enumerated. But these are quite enough. They are in accord with physiological teachings and the practical experience of many others. In approaching the subject of shock, however, I do not feel that I am standing on so secure ground. The effects of shock are well recognized. What it is—the origin, sequence, and connection of the processes which result in the profound vital depression that characterizes its more pronounced types—baffles as yet our means of research. The blood-pressure falls, the remote arterioles contract, the heart falters. Death outright may occur. Just how the pouring of a quantity of warm saline solution into the right heart may help in overcoming these conditions I will not venture to explain; I will not even claim positively that such infusions will have this power at all; but I have had some experience which seems to indicate such a power, and this I submit in the following cases:

Case V.—Woman, aged twenty-nine years. Thrown into profound shock by an internal strangulation of bowel. Despite morphia, atropia, and stimulants, shock became more profound while preparations for laparotomy were being made, until finally she was pulseless, unconscious, extremities cold, apparently dying. About eight ounces of saline solution were then injected into the median basilic vein. She revived, her radial pulse appeared again with some fulness and strength. Laparotomy was proceeded with. She bore a somewhat prolonged operation, but later sank again into collapse from which renewed infusion was powerless to rally her, and death supervened.

Case VI.—Woman, aged forty-five years. Vaginal hysterectomy for carcinoma. General strength already much reduced. Operation embarrassed and prolonged by rigidity of perineum, size of uterus, and friability of the cervix. Patient in profound shock at close of operation. Saline infusion to the amount of one quart into the median cephalic vein. Usual accessory treatment for shock also applied. Immediate restoration of the pulse. Subsequent gradual general improvement. Uncomplicated healing. Satisfactory recovery.

Case VII.—Male, aged thirteen years. Run over by a wagon. Multiple contusions over chest and abdomen. Profound shock. Vigorous measures to secure reaction, including lowered head, external heat, hypodermatic administration of whiskey, digitalis, and nitro-glycerin, resorted to in vain. Patient's condition became steadily worse. Pulse almost imperceptible, breathing short and gasping, pupils dilated, consciousness lost. While thus moribund, a saline infusion was instituted. When one quart had been injected the pulse became slower and more full, his gasping respiration disappeared, and signs of returning consciousness began to be evinced. The injection was continued until two quarts had been infused, by which time he had become perfectly rational and his pulse 124 per minute. His after-history was uneventful. A slow but steady improvement in all symptoms followed, and a perfect recovery was secured.

Most of the cases that I have related occurred in my service at the Methodist Episcopal Hospital in Brooklyn, and the infusions were done by the internes on duty there. The saline solution used has not been the same in all cases; in some a simple six pro mille solution of common salt was employed, in others a more complex formula was adopted, in which an attempt is made to include all the salts of normal blood serum. I do not consider that the latter is at all important; indeed, equally good results have been obtained from the infusion of pure water alone. Wherever a little table salt and some boiled water can be procured, all the material that is requisite has been supplied.

No complicated apparatus is required for the infusion. We have used the well-known Colin's transfusion apparatus because it is convenient and it has been at hand. This comprises only some

elastic tubing, a tip, and a funnel with a syringe attached to it. The syringe, however, is unnecessary. A glass funnel, two or three feet of clean rubber tubing, and a bit of glass tubing for a tip to introduce into the vein, is all the apparatus required.

The exposure and opening of the vein is one of the simplest operations possible, and may be done with the crudest instruments, if better should chance not to be at hand. I would guarantee to do it quickly and safely with a pocket-knife, a bent pin, and an ordinary pair of scissors, to be found in any house, if the emergency required.

Let me urge the more general and frequent resort to this procedure in all cases of acute anæmia from hemorrhage and of profound shock that does not respond to ordinary stimulation. Let it be remembered that its value depends on the rapid diffusion throughout the circulating apparatus of a considerable volume of fluid, and that for this purpose no other procedure can compare with it for efficiency. Intra-arterial, intra-peritoneal, rectal, interstitial injections are all subject to great limitations, either as regards the rapidity or the volume with which they can pour fluid into the bloodvessels, and are all inferior to the intra-venous method.

I am inclined to think that in my earlier cases an error was made in not injecting a larger volume of the solution into the vein. I am not satisfied now that some of my fatal cases would not have terminated differently if a larger volume of the fluid had been infused. Certainly the infusion, when once commenced, should be proceeded with until full reaction of pulse and consciousness is secured, and if later renewed collapse should threaten, it should again be done as boldly and as freely as at first.

XIII. On Surgical Shock.

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The terms "shock" and "collapse" are very often used interchangeably, although they really are not so. The word "shock," derived, according to lexicographers, from the verb to *shake*, conveys in itself an idea of suddenness and of damage from without.

"Collapse," on the other hand, signifies a falling together or falling in, as of a building weakly constructed. The phenomena of the two conditions are similar in that they both consist of sudden and more or less marked prostration. And it may be correctly said that a man, under the shock of an injury or an operation, falls into a state of collapse. But collapse occurs, also, as the result of causes not properly coming under the head of shock, as, for example, in cases of cholera, of peritonitis, of internal hemorrhage, of certain animal poisonings, etc.

Dunglison's *Medical Dictionary* (edition of 1874) defines *shock* as follows: "Sudden or instantaneous depression of organic, nervous, or vital power, often with more or less perturbation of body and mind, passing either into reaction or fatal sinking, occasioned by the nature, severity, or extent of injury, or by an overwhelming moral calamity." This definition he credits as quoted from Coupland. As synonyms of shock, Dunglison gives "Vital Shock, Vital Depression, Nervous Depression, Fatal Sinking." He also refers the reader to "Concussion," under which head he says: "In surgery it is used for the agitation often communicated to one organ by a fall upon another; as to the brain from a fall on the breech, etc. In all severe injuries, in sudden encephalic hemorrhage, and in overwhelming emotions, a concussion or shock is felt to a greater or less extent in the nervous system, which requires the careful attention of the physician." Of *collapse* the same authority gives the following definition: "A complete prostration of strength, either at the commencement or in the progress of a disease."

Billings defines "shock" as "the nervous exhaustion and depression of the heart's action caused by a wound or injury;" and "collapse" as "great and comparatively sudden prostration, with paleness, coldness, and very feeble pulse."

Gould defines "shock" as "the depression or grave effect produced by severe injuries, operations, or strong emotion;" and "collapse" as "extreme depression and prostration from failure of nervous force, as in cholera, shock, hemorrhage, etc." He further gives "secondary or insidious shock" as "a second attack occurring after the first."

It will be noted that while neither of these definitions is beyond criticism, the idea of an external disturbing influence as implied in the word "shock" has been clearly entertained by each of these authorities.

The word *shock* has been adopted into the medical nomenclature of France, Germany, and Italy, probably on account of its brevity and significance. The French word *ébranlement*, or shaking, like the German *erschütterung*, is much longer, and has a colloquial meaning which makes it less available. I do not know what the Italian word is which has given place to it.

Both terms, "shock" and "collapse," always imply an element of suddenness. It seems to me that there is a certain incorrectness in the use of the term "secondary shock." When a man sustains an injury, or undergoes a severe surgical operation, there is a greater or less degree of shock perceptible. If the tax upon his powers of resistance has been very great, reaction may partially occur; but when his reserve force is exhausted, he sinks again into a state this time of collapse. We sometimes see, under the same conditions, a partial reaction, and then a steady decline of power for days or weeks, the patient growing gradually weaker and weaker until he dies exhausted. Here the element of suddenness is wanting, and the term "collapse" cannot be properly employed in describing the process.

It is a singular fact that the recognition of the state of shock, as a distinct condition attendant upon severe injuries and surgical operations, dates back less than sixty years. Yet the phenomena, to the sum of which we give this name, must have been open to observation in all ages. We cannot suppose that the vast building operations of the ancients, in Egypt, in the East Indies, in Greece, and Rome, were carried on with never an accident; and although the mechanical appliances used in those stupendous works are unknown to us, we may be sure that a laborer on the Pyramids, who had the misfortune to have a leg or an arm crushed, must have presented much the same symptoms as would a workman on one of our railroads under like circumstances. We do, indeed, find some reference to this matter by some of the older writers. Heister says: "Gunshot wounds, though in the strongest constitutions, generally produce the worst of symptoms, as excessive weakness, faintings, tremors, palpitations, convulsions, hiccoughs, etc., after which succeed instantly dangerous fevers, nauseous vomitings, and the like." And again: "Amongst the many terrible symptoms attending these wounds, the first is an excessive languor, which is soon followed by fainting fits, partly occasioned by the hurry of their spirits, and partly by the effusion of blood."

Clearly as this passage indicates the state in question, it was written at a time when isolated facts were noted, without being grouped and generalized so as to develop principles. And, indeed, in that day the opportunities for observation afforded to individual surgeons must have been limited, as was also the intercommunication of ideas. In military and naval practice shock was observed as the effect of gunshot wounds, and was supposed to be peculiar to this form of injury; but it is scarcely more than incidentally referred to by them.

Early in the second quarter of the present century the development of steam-power, and the consequent multiplication of machinery, while adding greatly to the comfort of human life, increased in a corresponding degree its risks. With the growth of population everywhere, there came to be vastly greater numbers of people engaged in dangerous occupations, and accidents became far more frequent. To take one example only: The recent report of the United States Commerce Commission states that 20,025 persons were injured on the railways of this country during the last year, while 6,334 were killed. Among railroad employés, one in 33, or about 3 per cent., were injured. When we consider besides these the risks of factory-workers and miners, and all those of ordinary life, it is not strange that severe injuries are far more commonly observed by the surgeons of our own day than by those of any former period. Along with these increased opportunities for observation, there has come a vast increase in the number of observers and in the means of interchange of facts and opinions; and this naturally led to the grouping of phenomena, and their arrangement under appropriate headings or names.

So far as I can ascertain, the first essay on the subject of shock was published in 1834 by a French surgeon named Delcasse. He called it "commotion;" and this word is still very often employed by surgical writers in France. Hellge, a German, followed in 1839, using the same term. Sir Charles Bell, in 1840, spoke of "commotion from severe wounds," quoting from Travers a case of gunshot wound, and from Sir Astley Cooper one of a crushed knee, giving a good description of shock. The earliest American writer upon the subject was E. S. F. Arnold, of New York, who published in 1863, in the *American Medical Times*, a paper "On the Uses of Opium in Managing the Shock and Reaction of Surgical Injuries."

A notable paper by an English surgeon, Mr. Morris, "On Shock after Surgical Operations and Injuries," appeared in 1867, and attracted general attention to the matter, which from that time was recognized as one to be formally treated of in systematic works on surgery.

Causes.—Shock is probably seen by surgeons most frequently as the result of railway accidents, or in manufacturing districts in injuries by machinery, and in mining regions in those due to explosions. Injuries to the spine would seem to occur very often among lumbermen, and are always followed by severe shock. The unfortunate abundance of firearms has made us all unduly familiar with gunshot wounds and their effects. Burns are apt to be followed by very severe shock, in proportion rather to the extent of surface covered by them than to their depth or to their situation. As a general rule, whatever the character of the injury, the nearer it is to the trunk, and the severer the damage, the more marked and the more prolonged is the ensuing shock.

Shock sometimes follows blows, as, for instance, upon the epigastrium, in which there is no evidence of lesion. Goltz found that, by striking sharply on the abdomen of a frog, the action of the heart was paralyzed. The blood seemed to stagnate in the vessels, and very little passed through the heart. This effect he ascribed to the paralyzation of the vasomotor nerves, which in the frog are distributed, he says, to the veins as well as to the arteries. Violence done to the testicles in man has been known to bring on intense shock, and even death.

According to Savory,[1] "Shock is the paralyzing influence of a sudden and violent injury to nerves over the activity of the heart." Brunton thinks the impression on the heart is produced through the vagus nerve, and this seems very probable, although difficult of demonstration. As seen in man, shock would appear to be essentially a condition of the nervous system, and especially of the cerebro-spinal axis.

An element which is very often a potent factor in increasing the degree of shock after injuries is the loss of blood. Severe shock may, indeed, be present, as in many cases of railroad crush, when there has been little or no hemorrhage; but when there has been free bleeding, all the symptoms of shock proper are aggravated, and the chances of the patient's reacting are materially lessened.

[1] Holmes's System of Surgery.

Exposure to cold, as during transportation to hospital, too often adds greatly to the shock of an injury. Unfortunately, it must be confessed that, from the inattention of the surgeon and the carelessness of his assistants, patients are sometimes subjected to this disadvantage during the performance of grave operations.

Symptoms.—With the symptoms of shock all surgeons are probably in a general way familiar. The patient lies relaxed and helpless, his face and lips pale, his surface cool and bathed in clammy sweat, his eyes dull or unnaturally bright; he may for a time lose consciousness, and his mind afterward be either dazed, torpid, or frightened. This fright, which sometimes amounts to actual terror, has by some been assigned as a cause of the other symptoms; but it may not exist at all, and is often out of proportion either to the severity of the injury received or to the gravity of the other phenomena manifested. Especially when there has been free bleeding, there is extreme pallor, dilated pupils, yawning, thirst, perhaps nausea; the face is pinched and shrunken; sometimes the mind is wandering. Often there is no complaint of pain, apparently because the sensitiveness of the nervous system is blunted by the intensity of the shock it has sustained. In the former of these conditions the pulse is apt to be thin and corded; in the latter soft and compressible; in both it is usually very rapid. Respiration is shallow, and there is frequent sighing. Hiccough is sometimes very troublesome. Paralysis of the sphincters, especially of that of the bladder, is very commonly observed.

Occasionally we see a different condition, answering to that described by Travers as "prostration with excitement." The pupils are contracted, the skin dry and not markedly cool; there is dyspnœa and oppression, thirst, and frequent sighing; tossing movements of the arms and head, with general restlessness and tremor; the mind is anxious and perturbed, sometimes decidedly wandering.

From a condition of this kind the patient may pass into the more ordinary form of collapse. Or, which I believe is less common, prostration with excitement may occur as a partial reaction from collapse. But indeed, and this seems to me an important point, the state of shock or collapse is not always a uniform one; the condition of the patient may fluctuate between better and worse many times before its final issue is determined. Often what is called "secondary shock" would, I think, be more properly de-

scribed in this way as a mere aggravation of symptoms already existing. There is one point upon which something more definite is required than has yet been given here, and that is as to the temperature in shock. Anyone can perceive that the skin is cold; but we all know that this cannot be relied upon. I have been present when a patient of mine was seized with a chill, attendant upon a suppurative pelvic cellulitis; her hands were cold, but the thermometer under the tongue ran up to 105°. We find, however, that in cases of surgical injury or operation the condition of shock is attended with an actual lowering of the temperature. From the records of my service at the Pennsylvania Hospital I may be allowed to cite a few instances:

Case I.—A man, aged twenty years, had been struck by a locomotive; fracture of the base was suspected. His temperature on admission was 95°, but went up in an hour or two to 99°. During eight days it varied, sometimes going as high as 101.8°; just before his death it ran up to 103.4°.

Case II.—A man, aged thirty years, with a crush of the lower part of the thigh by a cable car running over it, had lost much blood; his temperature was 96.4°; reaction ensuing in three hours, amputation was performed, the thermometer then showing 99°, and going up to 100.4°; it fell to 100°, and death ensued three hours after operation.

Case III.—A boy, aged eighteen years, was struck by a wagon-pole, and had a compound comminuted fracture of the femur, patella, and tibia, with laceration of the vessels. His temperature on admission was 96.2°; it rose to 98.2°, then fell to 97.4°, and then rose to 102.4° before his death, twenty-four hours after the injury.

Case IV.—A man, aged thirty-four years, had a complete railroad crush of the leg, the bones being finely comminuted. His temperature was 94°, his pulse 160, his respirations 45. In two hours his temperature rose to 98°, but his other symptoms did not improve; he died about twelve hours later.

Case V.—A man, aged thirty years, was caught between two cars, and had great contusion of the abdomen, genitals, and thigh. On admission his temperature was 94.2°; in two hours it went up to normal, then fluctuated between 99° and 101.6°; on the twelfth day it ran up to 104.8°; then gradually came down, and was normal until his discharge about four weeks afterward.

Sometimes the degree of lowering of the temperature in very severe injuries is remarkably small.

Case VI.—A man, aged thirty-six years, with a suicidal pistol-shot of the right parietal region, the ball penetrating and lodging in the brain, with a number of fragments of bone, some of which were removed by trephining, had a temperature of only 97°; for two days it gradually rose to 100.8°;

then down for twelve days to nearly normal, then became subnormal, and so remained for nine days, and then went up to 102.8°; it is now, and has been for five days, a little above 100°.

CASE VII.—A boy, aged seven years, was severely burned about the abdomen and thighs; his temperature was 97.4° on admission, but in a little over twenty-four hours rose to 104°, then fell to 101°, and on the third day to 99°; it then ran up again just before his death to 104°.

The temperature does not always fall in cases of shock, at least in burns. Not long since two children were brought into my ward within an hour, each one extensively and fatally burned; one had a temperature of 104°, the other 104.2°.

Now as to the effect of operations:

CASE VIII.—In a case of disease of the hip, in a boy aged six years, I excised the head of the femur. Just afterward the temperature was 97°; in nine hours it had run up to 102°; it fluctuated for two days between 101° and 103°, remained for two days in the neighborhood of 102°, then ran up to 105° without obvious cause, and then came down to 99°, where it has remained for three days.

CASE IX.—On the 25th of November last I excised the knee-joint of a boy, aged eleven years, for gelatinoid degeneration. The boy had been in the hospital for two weeks, with a temperature constantly at 99° or 100°. Just after the operation it was 95°; it went gradually up to 100.6°; stayed at that for eleven days, then went down to normal, and remained so for five weeks, when it was no longer noted, the boy being about the ward, and practically well.

CASE X.—A week after the above-mentioned operation I excised the knee of a colored man, aged twenty-three years, for similar disease of long standing. His temperature never fell at all; it was 99.6° just before the operation, and 99.8° just after it.

CASE XI.—About ten days ago I opened the colon in the left loin in a woman, aged forty-six years, on account of malignant disease of the uterus which had ulcerated into the rectum. Her temperature just before the operation was 99.1°; just afterward it was 97.4°; twelve hours later it had risen to 101°, but soon fell again to normal.

CASE XII.—The lowest temperature I have found recorded at the Pennsylvania Hospital was in the case of a man aged fifty years, who was found unconscious in the street, having fallen in a slight apoplectic attack, as was supposed. He had been lying in the cold, and on admission his temperature was found to be 92.6°. Reaction took place within twelve hours, and complete recovery ensued.

The above data have been obtained on no special system, nor are they the result of a series of observations directed to this particular point. And I may say further, that where, as in the Pennsylvania Hospital, recent accidents are taken into a receiving ward, the

urgency of the work usually thrown upon the attendants is apt to prevent the taking of temperatures until the removal of the patients to the general wards, when it is at once instituted. Hence, some very low temperatures may have escaped notice. I should not feel that I had done justice to this matter if I made no reference to two important papers, one by Mr. Wagstaffe, and the other by Messrs. Churchill and Clark, which were published in the *St. Thomas' Hospital Reports* for 1870. Mr. Wagstaffe's article is especially on the temperature of shock in surgical cases. He mentions two fatal cases, one of burns and the other of a scald, in which the temperature in shock was 93.8°; another of a burn, in which it was 96°. In one of concussion of the brain it was 93.5°; the man recovered. In three fatal cases of fracture of the skull the temperatures were respectively 87.4°, 94.3°, and 95.2°. In one instance of compound fracture of both legs, with much hemorrhage, the temperature noted was 92.4°; yet a double amputation was successfully performed. In a case of ovariotomy, which proved fatal from extravasation and peritonitis, the temperature just after the operation was only 90°. In a herniotomy, in which death ensued from the same cause, it was 94.4°; and in a case of puncture of the liver it was 93°, death taking place in twenty-five hours. In a fracture of the fifth and sixth cervical vertebræ the temperature was 92.6°, the patient dying in thirty-two hours.

And here I would note what seems to me a very singular coincidence. Wagstaffe mentions the case of a man, aged forty-eight years, who fell a distance of forty feet, coming down upon his head, and fracturing the sixth cervical vertebra. His temperature on admission to hospital was 92.3°, but before his death, which occurred in forty-eight hours, it fell to 81.75°. Churchill and Clark, in their paper, give the case of a man, aged twenty-two years, who fell forty-five feet, fracturing and dislocating the sixth and seventh cervical vertebræ; his temperature on admission to the hospital was 93.5°, and steadily declined until his death, about fifty hours afterward, when it was noted at 81.7° in the axilla. The similarity between these two cases is certainly very remarkable.

It would seem from the instances now given, that while the degree of lowering of the temperature affords a fair index of the severity of shock, it is not altogether reliable as a means of prognosis. Thus, in two cases in which it went down to 92.6° and

92.4°, recovery took place, although in the former the injury was a crush of both legs, requiring a double amputation. And it may be noted as a curious fact that very often, just before death, when the powers of life are on the point of extinction, the temperature rises five or six degrees above the normal. To this the case cited from Wagstaffe, and that from Churchill and Clark, are marked exceptions, the temperature in them going down to what I believe to be the lowest ever actually observed in living man.

I think most of the surgeons present will agree with me that the symptoms which cause them most apprehension in cases of shock are a leaky skin, dilated pupils, restlessness, especially if there is delirium, and very marked thirst. Each of these in itself may exist without special significance; but in combination they augur ill.

The influence of age, constitution, temperament, and race is very marked, not only in regard to the liability to shock, but as to the prominence of its several phenomena. Extreme youth and advanced age, in my experience, are alike apt to exhibit it in a pronounced degree. In children, I believe the symptoms belonging to the nervous system are of less moment than in older persons. In the very old there is often a state of apathy or torpor which is more unfavorable than excitement would be.

On the influence of constitution and temperament upon the occurrence of shock after injuries, I need hardly dwell, as it has not much practical importance. As to its bearing upon the prevention of shock after surgical operations, this will come up more appropriately later.

The influence of race is very decided, and seems to be in somewhat exact proportion to the development and activity, or perhaps rather to the impressibility, of the brain and nervous system. We are told that the Hindoo races bear injuries and operations almost impassively. The negro seems but little susceptible to shock, and I think the same may be said of the Italian, and perhaps of the German, as compared with the Irishman. I have never had an opportunity to note the condition after recent injuries in Hungarians or in Chinese. The native American is rarely of unmixed blood, but the habits of life of most of our people are such as to stimulate them, and promote a general condition favorable to the occurrence of shock. Yet along with this there is often associated a buoyancy and determination which aids materially in reaction.

I have said nothing about the influence of sex, because I really know nothing about it. And I know of no observations upon which a comparison between men and women in this respect can be based.

As reaction takes place, the pulse becomes fuller, firmer, and slower, the respiration free and natural, the skin warm and dry, and the mind clear and steady. In a word, all the symptoms subside. Very often, perhaps invariably, there is for a longer or shorter period a precisely opposite condition, one of exaltation proportioned to the previous depression.

Prevention.—So far, what I have said has had special reference to shock as the result of injury. A very important branch of the subject, however, is that which concerns the bringing about of a like condition by the operations of surgery; and upon this, which might perhaps be better called the prevention of shock, I would like to offer a few words before taking up the matter of treatment.

In the times before the introduction of anæsthetics the endurance of an operation was in itself a cause of shock, just as an injury still is. This was partly prevented by benumbing the patient with laudanum or whiskey. At present, of course, pain is set aside almost invariably by ether or chloroform. But, as was most pertinently suggested by Dr. Cheever, of Boston, in a paper presented to the American Surgical Association in 1888, we have not only not done away with shock from surgical operations; perhaps in some ways we have made it more likely to occur. Rapidity of operation, formerly of prime importance, is now regarded as needless, and patients are kept a long time in the state of narcosis. Free flushing of the wound, either with boiled water or with antiseptic solutions, is very generally and too often recklessly employed; the patient is apt to become drenched, and to be very seriously chilled in consequence. Being unconscious, he makes no complaint of exposure to cold, or of the discomfort of wet clothes or skin. I think any practical surgeon can attest the truth of these statements.

Here let me refer to a point which has frequently come under my notice. A patient who has met with an injury requiring operation is placed upon the table and anæsthetized; after a time he becomes pale, and manifests all the symptoms of profound shock; he vomits the contents of a full stomach, and the whole system is at once relieved. Of course, this can always be avoided when the

operation is not one of emergency, which must be done at once without regard to the antecedent conditions.

When an operation can be foreseen and prepared for, the best safeguard against shock is the administration of a quarter of a grain of morphine hypodermatically half an hour or an hour before the time. Stimulants in moderation, and well diluted to promote absorption, may also be given; but I cannot wholly indorse Dr. Stephen Smith's proposition to give an ounce or two of whiskey in hot milk every two hours, for eight or ten hours, so as to produce a state of semi-intoxication. Our rule at the Pennsylvania Hospital is to give only liquid food on the day of operation, and but a small allowance of that. Here, I think, comes in the consideration of constitution and temperament. The feeble and timid need decided and vigorous stimulation physically and encouragement mentally. Stolid, calm, unimaginative persons are apt to have less shock, and hence require less in the way of precaution than the nervous, irritable, and sensitive. The patient should be well wrapped up, and during the entire time of the operation all needless exposure of surface sedulously avoided. By a proper arrangement of sterilized mackintosh the wetting of the clothing and of the skin, except at the part operated upon, can be prevented. No needless delay should occur, either in lecturing or demonstrating the steps of the procedure, or in procuring instruments overlooked beforehand. The administration of the anæsthetic in any but very brief operations should be intrusted only to an experienced person, and should be carefully watched, only enough ether being given to maintain a sufficient degree of unconsciousness. The operation should be performed as quickly as possible with due regard to thoroughness of detail. Flushing of the wound should be done with hot water only—water hot enough to make the exposed tissues slightly gray or pearly in color, or at least as hot as one can well bear the hand in. As soon as the operation is concluded and the vessels secured, closure of the wound should be effected, and the dressings, prepared in advance, should be applied.

It may be well now to consider the question of operation in cases of shock. Suppose the case of a limb hopelessly crushed, what is the proper period for interference? It may be remembered that some of the British military and naval surgeons were wont to recommend "letting the knife follow the shot," with the idea that the pain of the amputation would act as a stimulus. But this was

before the humanitarian period of surgery, and sprang, I think, partly from the then prevalent idea that there was something peculiar in the effects of gunshot wounds upon the human system. I think we must all of us have seen instances in which amputations were performed upon patients severely shocked from accidental injuries, yet with a successful result. But I also know that I have repeatedly seen such operations end badly, reaction seeming to be checked, and all the symptoms aggravated from the beginning of etherization. Many years ago I became satisfied that the effect of the inhalation of ether affords a tolerably fair test of the propriety of operation. A few whiffs of it may be given, the pulse being carefully watched; if this gains in force and volume, and becomes slower, the other symptoms will probably decline also, and the administration can be continued until the patient is ready for operation. If the pulse flags or becomes irregular, the ether should be at once withdrawn.

Treatment.—As to the treatment of shock, it will probably be conceded that the advance made in soundness of principle and efficiency of practice has been not the least among the improvements of modern surgery. The time was when the administration of alcoholic stimulants by the mouth was almost the sole reliance of the profession in dealing with this condition. By one surgeon of high standing, the late Dr. John T. Hodgen, they were utterly condemned; he regarded absolute rest as the essential and sufficient remedy. I am not aware that his views in this respect ever gained any acceptance. That the patient should be disturbed as little as possible, all will admit; but few surgeons would be willing to trust to this alone.

In giving alcohol—and whiskey is the best form in which it can be used—what is needed is to get it into the circulation as soon as possible, and therefore it is a mistake not to dilute it freely with water, so that it may be absorbed readily. I think that in pronounced shock plain milk is apt to remain undigested in the stomach, and should therefore advise that, if given at all, it should be previously peptonized. Hot beef-tea, strong black coffee, carbonate of ammonia, and aromatic spirit of ammonia, all have value as stimulants to be taken by the mouth.

External heat should always be employed. As promotive of this, sinapisms have some advantage; applied to the epigastrium, they seem also to stimulate the plexuses of the ganglionic nervous system. The patient should be wrapped up, not merely covered

over, with blankets (two are generally sufficient), and large bottles or cans of hot water placed about him. In hospital practice cylindrical rubber bags are provided for this purpose, and are encased in flannel bags for use. Sometimes heated flat-irons can be more conveniently had than the bottles of hot water. The heat should be applied between the body and the arms, and to the lower limbs. When ordinary untrained assistance only is at hand, the surgeon will do well to see that the patient is not overburdened with heavy coverings, heaped upon him with the idea that warmth can be thus obtained.

The warm bath advocated by the late Dr. C. T. Hunter, of Philadelphia, has undoubtedly been successfully used in some cases; but, as a general rule, dry heat will be found both more efficient and more conveniently applied. The lifting of the patient into the bath and out of it again involves a disturbance and a tax on the strength, which is better avoided.

A large enema of hot water (at about 105° F.) will sometimes be of great service as a stimulant, and if there has been much loss of blood, its absorption into the circulation will also do good. Peptonized beef-tea may be given in the same way.

As a direct stimulant to the brain strong aqua ammoniæ may be dropped on a napkin or sponge, and passed in front of the nostrils. The raising of the foot of the bed, so as to facilitate the supply of blood to the brain, is very useful; and by some surgeons the firm bandaging of the extremities has been resorted to with the same object.

When there is much pain from causes which cannot at once be removed, such as the pressure of the tourniquet, or severe nerve injury, recourse may be had to the hypodermic injection of morphine; one-eighth of a grain will generally suffice, and it may be repeated if necessary. The exhausting effect of severe pain is an immediate danger which it is most desirable to avert.

As a heart stimulant, tincture of digitalis may be used in like manner, 30 to 60 minims at a dose, and with this, if the skin is leaky, we may combine $\frac{1}{150}$ grain of atropine.

Hypodermic injections of alcohol or of ether are very often employed, with or without from $\frac{1}{100}$ to $\frac{1}{60}$ grain of strychnine. These articles, of course, are directed especially to the whipping up of a flagging nervous system, and through it of the heart and lungs.

When a large quantity of blood has been lost, and there is reason to believe that this is a potent factor along with the shock of the injury in inducing the condition of collapse, there would be reasonable ground for a resort to transfusion. I am not aware that this has ever been done with success in such a case; but theoretically it would be a proper course to pursue.

One of my former teachers used to be fond of speaking of the tripod of life—the brain, the heart, and the lungs. It seems to me that in our practical dealing with shock, our battle will always be best carried on if we bear in mind the importance of each of the elements of this combination; if in every case we are guided, not by a hard and fast rule or routine, but by the phenomena actually present before us. And I cannot close without referring to the fact, which might well be the subject of a special essay, that as surgeons we rarely have to treat the physiologically perfect or ideal man, in whom the tripod just mentioned is in every part solid and reliable. Those who come under our care are almost always the bearers of flaws of some kind, the scars of former battles against Nature. Overwork, dissipation, alcoholism, syphilis, tubercle, past disease, or perhaps merely the general hardships and exposures of a life of poverty and wretchedness, have in a very large proportion of our cases more or less impaired the strength of the organism, and sapped its powers of endurance. It is no doubt this unknown quantity in the equation that often baffles our best-directed efforts in behalf of the injured.

DISCUSSION.

Dr. Albert Vander Veer, of Albany: My first experience with cases of shock was obtained during the war of the Rebellion. I was then impressed by the fact that some soldiers when torn nearly to pieces by a ball would suffer less from shock than others who had been but slightly injured, or perhaps not even touched by the ball which had simply penetrated the clothing. Those who suffered most from shock did badly compared with the others. The same peculiarity is noticed in cases of railroad injuries, etc., in civil life. The shock is not always proportionate to the amount of blood lost. Injuries to the testicle sometimes produce profound shock. I have also observed profound shock in the removal of brain tumors; sometimes when a liga-

ture encloses a nerve twig there will suddenly be marked change in the pulse.

Referring to the treatment, a great deal of carelessness is shown in the application of hot bags; the patient is often burned, or the bags are not hot enough. Hot water is often of great value in laparotomy cases for restoring patients from severe shock; the peritoneum absorbs water, and in that way the beneficial influence is enhanced. The result is in a measure similar to that produced by intra-venous injections which was discussed in Dr. Pilcher's paper. I have myself injected as much as sixteen or eighteen ounces directly into the veins, with the effect, in some instances, of bringing about a revival. It must be admitted, however, that there is often disappointment in the treatment of shock.

Dr. Lewis S. Pilcher, of Brooklyn: There is still another agent which has not been mentioned in the paper, namely, hypodermic injections of nitro-glycerin. One should bear in mind, since as is well known all other agents sometimes fail, a possible benefit to be derived from this agent in lessening the labor of the heart in the propulsion of the blood through the arteries. One might inject $\frac{1}{200}$ to $\frac{1}{100}$ of a grain dissolved in water every hour or every two hours as the case seems to require.

Dr. Herman Mynter, of Buffalo: I do not think that severe shock is the result in most cases of hemorrhage. The most severe shock occurs during certain operations in which very little blood may be lost, as in brain surgery. I have seen profound shock during linear craniectomy, due, I think, to direct irritation of the brain. Shock also often attends operations exposing the heart or lungs, although there may be little hemorrhage.

Dr. R. F. Weir, of New York, laid stress on the value of hot water, with or without stimulants, injected into the rectum. Also hypodermic injections of strychnine, $\frac{1}{25}$ to $\frac{1}{20}$ of a grain every hour for say three doses, and nitro-glycerin in much larger doses than Dr. Pilcher had recommended, using $\frac{1}{30}$ to $\frac{1}{25}$ of a grain for perhaps three doses.

Dr. Robert T. Morris, of New York: In cases of shock, drugs should be used in amounts to bring about the desired result. Nitrite of amyl held to the nose, nitro-glycerin injected in doses of $\frac{1}{100}$, $\frac{1}{60}$, or larger fractions of a grain until results are obtained, strychnine employed in the same way, hot water injected into the rectum at a temperature of about 110°F., the limbs surrounded by hot bottles—these five resources have proven extremely valuable.

XIV. Compound Comminuted Fracture of the Skull; Recovery.

By WILLIAM STEVENS, M.D.,
NEW YORK.

The report of the following unusual case is very interesting, and I hope that any member of the State Medical Society who may be interested in this class of cases will report the same in the *Transactions* in the future, that the active surgical workers may become familiar with the percentage of such injuries as compared to former procedures.

L. M., a girl, six years of age, was playing with other children in the rear yard of a tenement-house, five stories high, when an axe—the usual wood-chopper's axe, and helve—fell from the top floor fire-escape and struck the little girl upon the skull, fracturing it, in the region of the right side, extending from the sagittal suture one and three-fourths inches downward, and a little posteriorly. This injury we find, then, to be explicit, occupies a large space between the coronal suture anteriorly and the lambdoid suture posteriorly, and upon the right side of the skull. The child had just been injured when I saw her first. I carefully removed several spiculæ of bone to relieve the pressure upon the brain; the child was unconscious for two hours. I also noted the loss of brain substance to the amount of a tablespoonful. After removing all sources of irritation and bandaging the head, I could only notice developments. For a period of six weeks there was considerable paralysis of the left leg and arm. As the time from the shock lengthened, these symptoms gradually disappeared, and the child has regained her full vigor and strength. This terrible injury required to be healed by granulation only, as the periosteum was completely scraped from the bone surface. The amount of depression left at present in the skull, and covered by the skin, is a little more than one-fourth of an inch in depth. Since this injury occurred, seven months and twenty days have elapsed, and the child is in her usual health, and no brain symptoms have been manifested since the third month after June 10, 1891, the day of the accident.

XV. Discussion on Removal of the Uterine Appendages for Hystero-epilepsy.

Hystero-epilepsy, with Report of Cases.

By A. VANDER VEER, M.D.,
ALBANY.

Notwithstanding the grand advances that have been made in the realm of abdominal surgery, still there remain certain conditions upon which it is desirous of obtaining a more complete consensus of opinion, especially from those having a practical experience. I refer to the subject of hystero-epilepsy, which, with its train of symptoms, treatment, etc., is yet subject to further discussion before coming fully under the domain of the abdominal surgeon. The term hystero-epilepsy is one perhaps in which there is not yet a complete and unanimous understanding of its meaning. Whether we look upon it as a form of hysteria the convulsive attacks of which resemble epilepsy, or whether we consider that it is a pathological condition in which the form of convulsion presents a greater amount of coördination than ordinary epilepsy, or whether we consider it simply as resembling an hysterical attack, still the fact remains that the symptoms, in whatever form they present, give evidence of great nervous disturbance. That true epilepsy may be its outgrowth is, to me, a position not untenable. The abdominal surgeon not infrequently has all his sympathies aroused in the description of a case that has baffled all medical skill, and now comes the cry from the general practitioner: "Cannot something be done in the way of operative interference that will bring the patient relief, and comfort to her friends?"

It is not inconsistent, when we consider the relations that exist between the uterus, its appendages, and their functions, and the nervous system of the female, to realize that there is a great possibility of nervous derangement or nervous strain and distress being continued, not infrequently resulting in organic changes.

To one who has given study and careful observation to the subject of hystero-epilepsy there are certain classifications or conditions and symptoms that present themselves in such a manner as to command our most profound consideration and respect. Heredity is

an element that must be considered. The girl born of exceedingly nervous parents exhibits an inheritance of temperament that cannot be overlooked. The nervous conditions that present must be constantly kept in mind as to the time of life. If the girl previous to her menstruation presents the train of symptoms that at times almost border upon hysteria, she is to be all the more carefully watched when the menstrual period does appear. There must now be a very careful looking into of the important considerations that may offer, especially in reference to the development of hystero-epilepsy or true epilepsy. The time of the development of menstruation, to my mind, is clear as bearing upon these cases. The girl who begins with irregular menstruation, perhaps with three, six, or twelve weeks' intervals, continuing in this condition for two, three, or more years, is of that class of patients, the vast majority of which present sooner or later organic changes in the ovaries, as to degeneration (cystic or otherwise), or leading to a condition of malposition, or of tubal trouble, that, when carefully looked into, often present a solution of her malady.

The limit of this paper will not permit me to enter into the pathology, the changes, and conditions that lead up to, and which are present in, cases of hystero-epilepsy. I have on many occasions endeavored to heed, listen to, and, if possible, answer the inquiry that is so frequently made: "Will operative interference not afford relief to this class of patients?" which, in many instances, becomes so distressing. We have but to look into our text-books, and still more to study the discussions that occur from time to time in our special societies, to know that the treatment of these cases by operative interference is far from being a satisfactory solution of the problem; and yet there has been sufficient success in this direction to embolden many in making the assertion that hystero-epilepsy is benefited by operative interference, by removal of the uterine appendages, and this line of treatment. There are others, again, who are equally well pronounced against such a procedure as oöphorectomy or any modifications of it.

I have the following cases on record, which I desire to report somewhat briefly, and then to draw some conclusions from the same in the opening of this discussion.

Case I.—Miss B., thirty-three years of age, operated upon by Mr. Lawson Tait, at the Albany Hospital, September, 1884; reported in the *Medical Annals* and in the *New York Medical Record*, January, 1885. The following

is a short history of the case taken from Mr. Tait's clinical lecture upon the same:

"Subject to hysterical fits for over thirteen years. Hysteria, because patient never injures herself during attacks, or becomes drowsy afterward, as is the case with epilepsy. Fits come on before menstrual epoch; periods are fairly regular, but lacking in quantity. Health good to puberty, but bad for past twelve years. Chief symptom pain before menstruation, but relieved then. Uterus infantile and anteflexed. Such cases frequent in England, where patient's life is one agony from commencement of menstruation. Right ovary enlarged; left could not be felt. Operation proved right to be cystic; left small and shrivelled." Patient hysterical during convalescence, with one convulsion, with complete insensibility, six weeks after operation. Had several convulsions during first year after operation, and much of old feeling about pelvis; still, much better. I was told by Dr. Boyd during this past year of 1891–92 that this patient still had occasional convulsions, but that in a general way her condition is very much better than before the operation.

Case II.—Miss M. B., twenty-four years of age, domestic, referred to myself by Dr. La Moure. Menstruated at fourteen, and from first was irregular; had leucorrhœa and epileptiform seizures. Always vomited at menstrual period unless under influence of morphia; the latter unable, however, to relieve pain after a few years. Four years ago was admitted to Albany Hospital, under care of Dr. Boyd, for treatment of leucorrhœa. Later has spent some time in Utica and Binghamton asylums, with little or no benefit. I operated for removal of the uterine appendages May 27, 1886. Cyst, size of cherry, in each ovary; otherwise normal. Left ovary markedly adherent. No drainage-tube; silk interrupted sutures to close wound. Convulsion followed operation, another in four hours, and a third one—light—on sixteenth day, at return of menstrual period. Rallied well from operation. After twenty-four hours marked tenderness of left hypogastric region developed; in thirty-six hours a profuse, frequent, and greenish vomit, which persisted for five days. On 29th temperature reached 103⅔°, reaching highest point following day, 104⅕°. After this, symptoms improved steadily, and sutures removed on June 2d, when patient had toast and tea for first time. Nourished almost exclusively per rectum for five days. Catheter used; bladder emptied naturally on fifth day; natural movement of bowels sixth day. Had many rectal injections to relieve accumulated gas; also used rectal tube. Hypodermic abscess developed on tenth day, and one stitch-hole abscess fifteenth day. Discharged June 24, 1886, appearing well, and much better in mental condition, but complained of great tenderness through pelvic region. Bimanual examination failed to discover anything abnormal. One year after operation patient returned to hospital. Had had many attacks of vomiting, somewhat like those before operation, and came now for relief of morphine habit. Under careful restraint and discipline she eventually made a good recovery. I was told four years after the operation that she had had no return of the convulsions; was very much improved and able to do housework. This patient can be classed as one of recovery, with entire relief of the convulsions.

Case III.—Miss M. C., nineteen years of age; good family history. Well up to age of fourteen, when menstruation began. Epileptiform seizures soon developed, and grew gradually worse: since fifteen has had severe pain in left side. Operation performed October 6, 1886, and both ovaries and tubes removed. The former were smaller than normal; no microscopical examination. Made a good recovery from operation; epileptic fits returned on eleventh day and persisted. Discharged on October 23, 1886. Later, I received the following letter from her physician, who had sent the case to me:

Rensselaerville, N. Y., January 7, 1887.

Dr. Vander Veer: In answer to yours, relative to Miss M. C.'s case: She is still having convulsions, although they are not quite so severe nor frequent as before the operation. Her intellectual faculties are certainly improved. Two months from time of last menstruation she passed through quite a stormy time mentally; refused to eat for three days, and slept but little during that period. She recovered as suddenly as she was attacked, and now averages about three convulsions a week, and general health much better than formerly. Before operation, convulsions had never been less than five or six a week for four years. Very truly,

L. N. Lanehart.

After this letter was written by Dr. Lanehart the case was made very much better by the use of bromides, but then again relapsed because of the carelessness of her mother in allowing her to eat of anything and everything she desired. When the stomach was overloaded she would have a convulsion. Also, when up late at night at parties she would have a convulsion. This cannot be said to be a case of recovery, yet the patient was somewhat better than before the operation. Beyond a doubt a case of true epilepsy.

Case IV.—Sent by Dr. Eugene Beach, Gloversville, N. Y. Miss K. S., thirty-three years of age; good family history; never strong; menstruated at twelve; never very irregular, but severe dysmenorrhœa. After fifteen, epileptiform seizures accompanied menstruation, in a few years taking on the form of mental aberration. Much worse for past few years. Appendages removed January 13, 1887; ovaries in a state of cystic degeneration. Incision closed with six deep and two superficial silk sutures. Rallied well from operation, but severe pain followed, and one-half grain of morphine given hypodermically the first half hour. Bowels moved twice the third day—once by enema, once by rectal tube. Later, rectal tube occasionally passed with good results in relieving gas. Urine drawn for five days. Nausea troublesome for a week, but no vomiting save a little mucus soon after operation. Temperature reached highest point, 101°, on third day, but bowels moved, and it declined, rising again on twelfth day to 101°, due to time of menstruation. Stitches removed on sixth and seventh days. This case has been a marked success in many respects; no severe epileptiform seizures, but occasionally will have *petit mal* attacks, with partial loss of consciousness. Feels that she has been very much benefited by the operation. These last notes taken December, 1890. A peculiarity in regard to this case is that a younger sister, suffering very much in the same way, has applied for the

operation her sister underwent, and would be content if she receives as much benefit as the former did.

Case V.—Sent me September 19, 1890, by Dr. Curran, of North Adams, Mass. Miss M. M., nineteen years of age; cook by occupation. Family history good, with the exception of one sister developing an abscess in the arm, six or eight years ago, from which she has never entirely recovered. Patient had, when two years of age, what were designated as "worm fits," about six in number. She then enjoyed immunity for three years. At the age of five years she again suffered from seizures of similar kind. These continued until patient was about ten or eleven years of age. Never had an aura before convulsions, attacks coming on suddenly, with a feeling of faintness. At times she was conscious throughout attack, again unconscious. After the age of eleven, seizures became less frequent, but of longer duration. Intervals between seizures from two to four weeks. About one year ago had an attack of peritonitis; since then complains of pain in ovaries. Attacks are now both more frequent and prolonged, and a single one may last five hours. Seizures now accompanied by convulsions, during which she bites her tongue. These paroxysms bear apparently no relation to the menstrual period. Pain of a lancinating character in both ovaries frequently precedes the attack, but more often comes on ten or fifteen minutes before attack ceases. Patient, as previously, may or may not be conscious during seizures. Intense cephalalgia is the sequel of every attack, the pain passing through eyes to top of cranium. Menstruation is painful during second and third days, lasts four or five days, and is copious. Appetite good and bowels regular. No increased desire for micturition, except when ovarian pain is severe. Patient went home about September 20th, having been in hospital for ten days under treatment. I declined to do an operation, believing the case to be one of true epilepsy. She returned on January 13, 1891, no better, and herself and mother desiring much that the appendages be removed. Previous to their coming I had received the following letter from Dr. Curran relative to her condition:

North Adams, Mass., December 29, 1890.

My dear Doctor: It is now nearly six weeks since I have written you regarding Miss M.'s case. She improved quite well under treatment of large doses of acid. hydrobromic. dilute 33⅓ per cent. The epileptic seizures were less frequent, and nearly a month passed without any fit, but still suffers from pain in ovaries. For the past four or five weeks she has been taking over two teaspoonfuls of the acid, but dose now causes headache, dizziness, and nausea, with occasional attacks of vomiting. She is having several severe attacks of epilepsy a week, with great ovarian pain and irritation. When the fits now come on they are more severe than ever. What would you advise to be done? She is still anxious to chance the success of an operation for relief of the pain she suffers in ovaries.

Yours very truly, Chas. J. Curran, M.D.

After careful explanation regarding her chances, oöphorectomy was performed January 19, 1891. Wound did not do well. Superficial stitches removed on fifth day because of angry condition of wound. One deep

suture removed on seventh day. All remaining sutures removed on ninth day. On removal of second stitch above, great yawning of wound and profuse discharge of fetid pus. More or less gaping followed throughout course of wound. Dressing: bichloride 1 to 2000 lotion, dry iodoform powder, plaster straps, and iodoform gauze. Patient has always complained of considerable pain shooting from right to left, corresponding exactly to former ovarian pain. Great increase of pain January 31st. February 1st, epileptiform seizure. February 2d, two in morning, four in evening. Between February 2d and 3d, morphine, gr. ¼, and sodium bromide (gr. xx.) were administered. No convulsions that night. On February 3d, 9 P. M., bromide, gr. xl., in two doses. February 4th, again complained of pain in same region. Recurrence of attack feared and bromide (gr. xl.) exhibited; remained free. Wound free and granulating rapidly. February 18th, repeated attacks of great severity. Returned home February 28, 1891. Her family physician, Dr. Curran, informed me, November 9th, that she had improved since operation, and at that date seizures were very rare. On the 24th he wrote me that on examination he found patient had not been doing so well: that she had on an average one attack, with several fits, more or less severe, every five or six weeks. The fits are accompanied with great pain in the abdomen, especially on right side. The day prior to an attack she experiences considerable pain in right ovarian region. There is some soreness in abdomen after fits and great headache. There has been no menstruation since first month after operation, although with a very severe epileptic attack there may be a slight staining of the linen with blood. January 7, 1892, Dr. Curran writes that she has just recovered from a very severe attack of epilepsy; that for past two menstrual periods she has flowed profusely, and with this advent comes a terrible pain in region of right ovary, and then the fits. She is greatly discouraged regarding her condition. This patient does not present a satisfactory improvement. This is also a case of true epilepsy.

Case VI.—History given by Dr. Quackenbush, Schenevus, N. Y., the family physician. Mrs. J. W., twenty-four years of age: married at sixteen; has given birth to two children; had two miscarriages. Has had hysterical fits of an epileptic character ever since menstruation began; family history obscure, parents having died when she was a child. Menstruation normal until after miscarriages: children born previously; both births normal, recovering with no ill effects. First miscarriage about April 4, 1890; pregnancy three months advanced. She admits leaving bed two days afterward. Dr. Quackenbush was called to see her the following July, and found her suffering from acute metritis; temperature at its maximum being 104°. From general deportment he questioned her relative to pregnancy, suspecting foul play, but each time she misled examination. He became fully satisfied that this was the state of affairs, however. She improved after three weeks' illness, under treatment with morphine and warm antiseptic douches, but was left with following conditions: Left side extremely tender to the touch and enlargement of uterus on right side in about region of junction of Fallopian tube. Tenderness would not admit of examination of interior of uterus, and suspecting abscess the doctor determined to wait for future

developments. In two weeks a prominent enlargement manifested itself in right side, fluctuating in character. She suffered severe cutting pains, when suddenly there seemed to be a giving way—as she expressed it—and discharge of pus *per vaginam*, followed later by the expulsion of a decayed fœtus of three months' growth. She recovered from this condition with no after-treatment beyond antiseptic douches. Her condition remained nervous; she was feeble, unable to get about, could not stand erect, and was very tender on pressure over the ovaries and tubes. After correspondence with Dr. Quackenbush over history just related, I advised her being admitted to the Albany Hospital for preparatory treatment with a view to removal of the ovaries and tubes. On bimanual examination I found all the evidence of pus tubes with very marked tenderness of the ovaries. Pressure caused much distress and hysteroid seizures. Preliminary treatment was carried out, patient not improving. Section was done November 22, 1890. Many adhesions found, pyosalpinx and cirrhosed ovaries on both sides. She convalesced so rapidly that she was discharged in two weeks after the operation. Dr. Quackenbush writes me that she is now in perfect health, has never had a return of epileptiform seizures, and weighs forty pounds more than she ever did. All of the hysterical symptoms she has had ever since menstruation first began have entirely disappeared, and she is in fact a perfectly healthy woman. On close questioning it was evident that a surgical needle had been used to produce an abortion, but singular that she should recover as she did from a severe attack of metritis and fœtus remain *in utero*. Neither tube gave evidence of ectopic gestation.

Of this number of cases I think it is fair to assume that cases I. and IV. are decidedly improved, and have remained so sufficiently long to insure safety and comfort for their continued life.

Cases III. and V. may be looked upon as doubtful improvement; yet, on the other hand, they can very consistently be classed as true epilepsy. Surely cases II. and VI. can be placed in the column of absolute cures. It is also true, and must not be overlooked, that there were here decided pathological changes in the organs removed.

Did time permit, I would like to present the record of cases that have offered for operation, yet in which there seemed so little evidence of organic change in the uterus or its appendages as to hardly warrant operative interference. However, these cases have gone on enduring much from medical and gynecological practice, without benefit in many instances, and only a few cures.

When we study the conditions such as are associated with diseased ovaries, we know full well that an increase in size is often an evidence of disease; we know that cases of attempted suicide or mutilation of the body—when an autopsy was held—showed that

the trouble was entirely referable to the ovaries being changed to an abnormal size. We know that in our cases of hysteria we have perversion of the senses, hallucinations, loss of memory, and other conditions and manifestations of hysteria that are but the forerunners of insanity. The removal of these pathological and physiological causes that have produced hystero-epilepsy have led to cures. We know this to be a fact, that chorea is likely to become more severe under the disturbances of menstruation and pregnancy; also that epileptiform seizures are likely to become more severe at such a time. We know full well that melancholia is often only relieved when the misplaced uterus is put in proper position and retained. Eminent authorities state that hysteria and mania are often relieved when the genital organs are put in a healthy condition, after all other lines of treatment have failed. Removal of uterine polypi and retained placenta have relieved cases of mental aberration and approaching hystero-epilepsy.

We might cite other cases, but I am not desirous of advocating or disapproving the removal of the uterine appendages for mental disturbances of any kind. Dr. Thomas Keith has pronounced against operative interference; Mr. Lawson Tait has adduced evidence in its favor.

I trust the subject may be more fully discussed by those who are to follow. I should like to see the subject of the uterus and its appendages thoroughly reinvestigated, as regards any pathological change, in the case of women confined in insane asylums; also particularly in relation to cases of epilepsy occurring at puberty, and where we have reason to believe this condition is associated with masturbation. A careful and thorough review of all disturbances of the nervous system, in the early development of the female, seems to me very important; these cases may result in hysteria, this condition proving far worse later in developed insanity.

I am bound myself to a formula something like the following: That when a female gives the history of early nerve strain; that when her menstruation has been decidedly irregular; that when associated with pelvic disturbances she evinces a pathological train of symptoms bound to a condition of hystero-epilepsy, when a thorough and intelligent course of medical treatment has failed, and the case is fully explained both to the patient and her friends in all its bearings, and when consent has been given either by the former or the latter, then I am willing to operate.

If the patient is in that condition of mind unable to decide for herself, and friends are willing, or if she has no friends, I would then take the advice of the celebrated English jurist, and treat her as an infant.

XVI. Discussion on Removal of the Uterine Appendages for Hystero-epilepsy.

By H. J. BOLDT, M.D.,
NEW YORK.

It is an impossibility to lay down rules by which everyone can govern himself as to the value of removal of the uterine appendages in hystero-epilepsy, and yet it is a matter of such great importance as to demand our attention; it is, indeed, of unusual importance both medically and legally.

I know of no operation which is so grave from a medico-legal standpoint as this, for the nervous condition which we are called upon to consider it for. We take case after case, the history and personal observation of which point to the ovaries as the seat productive of the respective nervous disease, and yet only a certain per centum of the patients will be benefited by their removal, others will be made worse, and some again remain the same as before operation. Another series of patients affected with hystero-epilepsy, for whom the operation is not done on account of the nervous disease, which may be regarded as a mere coincidence, but solely on account of the gross pathological condition existing in the pelvis, without bringing the two conditions in connection—and, behold! some such patients are cured. When the connection between gross pelvic disease and the epilepsy was determined, and the operation done expressly for the cure of the nervous disease, the patients frequently recovered. This at once teaches an important lesson. On the other hand, how many cases there are in whom gross macroscopical lesions of the adnexæ existed, for which the operation was performed, who were not benefited. How much more necessary it is, then, to use an extra amount of precaution when such lesions are not so apparent on physical examination. The most careful consideration of the respective case in all its bearings should take place before we conclude that the operation is indicated.

There is benefit in the operation; it depends, however, on the particular gynecologist—if he is skilful and cautious enough to select the cases; it is not an easy task to delineate the indications for operation.

I will cite a few of the many cases reported; it will aid in forming an opinion, and also show how great our precautions must be before we determine to operate.

Borakowsky[1] related the following case in the Gynecological Society of Kiew: Patient, twenty-seven years old, had nervous disease for ten years, convulsions, loss of consciousness, and other hysterical manifestations. Menstruation was irregular and painful. Although she had received treatment from various sources, among others from Charcot in Paris, her condition was not improved. A pregnancy three years previous, during which she was in a lethargic sleep five times, had no influence on her condition. With the exception of sensitiveness of the ovaries, no objective symptoms existed. Oöphorectomy was done in Prof. Rein's clinic, and uneventful recovery resulted. During one year subsequent to the operation, only occasionally hystero-nervous manifestations were noticed, which Rein considered simulated. The uterus, which measured 8 cm. before operation, measures 5.6 cm.; menstruation did not return.

Dr. Reamy,[2] of Cincinnati, reports that he operated six times for epilepsy. The patient had suffered from constant headaches and epileptic attacks, for which she had been treated by various physicians without obtaining any relief. After the oöphorectomy the headache ceased, the epileptic attacks did not reappear, and the anxious, vacant stare of the countenance entirely disappeared. The detailed history of the case, however, does not appear. It appears that Dr. Reamy had two failures and four good results.

Dr. Palmer, at the meeting of the Cincinnati Obstetrical Society, reports a patient of thirty, upon whom he had operated with decided improvement of the patient; it is not stated, however, upon what he based the indication for operation.

Dr. E. W. Mitchell also reports a case which, for a short time subsequent to operation, promised good results, but finally proved a failure.

Dr. Francis Imlach, in the *British Medical Journal* for 1888,

[1] Centralblatt für Gynäkologie, 1888, p. 62.

[2] American Journal of Obstetrics, vol. xxi. p. 435.

p. 140, reports a patient aged forty years—had been bedridden for nine years. At the age of twenty or twenty-one she became subject, she said, to epileptic fits, which had continued to the time Dr. Imlach saw her. Apparently she had become bedridden almost as much from the increasing severity and frequency of the fits as from pain; her fits generally recurred three or four times in the day, and it was rare to pass a week with so few as four or five fits. She was always unconscious for ten or twenty minutes during a fit, but did not sleep heavily after it. Having been in five hospitals, special and general, for periods varying between six weeks to four months, and bromides and other nervines proving entirely useless, she had given up the expectation of cure. The Fallopian tubes were greatly distended, and on January 14, 1888, the appendages were removed. It was a case of double hydrosalpinx, with extremely cirrhotic and shrunken ovaries. The right tube contained half a pint of serous, shreddy fluid, and the left about half an ounce. The left ovary was no larger than a dried split-pea, and the right ovary about double that size. She had an attack of a few minutes' duration one hour after operation, and a week later another, but no more.

Mr. Hamilton, who sent the patient to Dr. Imlach, reports to him that she had received variable gynecological treatment with pessaries, etc., without relief. The epileptoid seizures were accompanied with marked arching of the spine at the commencement of the attack; unconsciousness for periods varying from ten to twenty-five minutes. Since the operation she had but two fits of any severity; they seem now to be amenable to bromides. Her condition is very much improved; she eats well and her backache is gone.

T. Spencer Wells, in the *American Journal of the Medical Sciences*, vol. xcii. p. 465, reports of Péan one case castrated for epileptic symptoms with mental disorder at the age of forty-five, with no good result. Battey, *ibid.*, p. 485, reports cases of two years or more. Seven castrations for oöphoro-mania—one cure, four improved, two not improved; and nine for oöphoro-epilepsy—*all cured*. Battey uses the terms oöphoro-mania and oöphoro-epilepsy, instead of hystero-mania and hystero-epilepsy, because his clinical experience teaches him that these disorders are dependent upon a nervous irritation proceeding from the ovaries and not from the uterus, and I also think that his terms are more correct than those in vogue. Dr. Battey cites a number of cases, viz., by Drs. W. H. Byford,

Reamy, Mann, Sutton, Howard, Wilson, Goodell, Thomas, and others, for which I would refer to the original articles.

Dr. Ernst Böhmi (*Correspondenzblatt f. Schweizer Aerzte*, 1886, p. 622). Patient, aged twenty-five, without hereditary taint, had her first menstruation at twenty-one years, with intense molimina; she had a long train of symptoms which were to be classed under hysteria. In March, 1886, the patient injured her finger, which resulted in a panaritium cutan., but soon healed again. On March 8th she had an unusually severe epileptoid seizure, accompanied by complete unconsciousness, which is said to have lasted two hours. After this the attacks recurred with great regularity three times every day, between 7 and 8 A.M., 11 and 12 o'clock, and 3 and 5 P.M. The seizures were observed by a physician. In the beginning the seizures had no aura, later there was one. Drugs administered by Dr. Bridler, such as chloral-hydrate, bromide of potassium, valerianate of zinc, morphine, opium, quinine, with or without iron, had no influence, except a deleterious action on the digestive organs. Subsequently the epileptoid seizures occurred as often as ten to twelve times in twenty-four hours, without the slightest cause, the aura beginning in a lower extremity.

Examination of the pelvic organ: On external palpation extreme sensitiveness in the left ovarian region; vaginally, a conical portio vaginalis (which had on a previous occasion been desciscd); the uterus not enlarged; moderate sensitiveness in the right ovarian region.

The left ovary, which was unusually sensitive, was enlarged, soft, and succulent. At the time of examination the patient expected to get an attack, but the sensation passed away on the cessation of the exploration. The urine contained no albumin. The diagnosis was peri-oöphoritis, and that the nervous manifestations had their origin from the left ovary.

The appendages were removed on April 27th. The ovaries (both were removed with the respective tubes) were enlarged, succulent in consistency, injected, and had undergone small cystic degeneration. Recovery uneventful.

From the time of operation there was not a single attack. (Italics are Dr. Böhmi's.) The details of this case are too lengthy to be given here, but it is advisable to peruse the original article, as the case is not only unusually severe, but exceedingly interesting. The case can, however, only be reported as improved, because in a foot-

note it is reported that after the lapse of four months she had several mild seizures.

Egidio Welponer in the *Wiener med. Wochenschr.*, xxix. 30, 1879, and *Osterloh-Schmidt's Jahrbücher*, vol. clxxxvi, p. 205, reports a hystero-epileptic of thirty-six years who had never menstruated, cured by oöphorectomy. The symptoms and examination caused the ovaries, which were in a pathological condition, to be considered the seat of the epileptoid seizures.

Schroeder in the discussion on Osterloh's paper, page 206, relates the case of a patient afflicted with mental disease and nymphomania, whom he castrated and who made a *complete* recovery. (Mental disease cured.)

Adrian Schücking, in the *Centralbl. f. Gynäk.*, p. 484–488, describes a case of severe hysteria in a patient aged thirty-eight, the cause of which he considers to be in a pathological condition of the pelvic organs. In December, 1878, the condition began after a fall through a pane of glass by which she injured her left knee-joint. The scar was excised. A course of local gynecological treatment in Hahn's clinic (Berlin) was without result; on the contrary, the symptoms and general condition became worse. All kinds of medication were absolutely useless. The left ovary was diagnosed to be diseased in Berlin. Schücking himself placed the patient on a very rational and scientific course of treatment, without benefit. The uterus seemed normal, as also the ovaries to the examining fingers, but the moment the left ovary was pressed upon an epileptoid seizure was produced and consciousness lost. The patient had, besides the nervous symptoms, constant pain in the left ovarian region and metrorrhagia. She was operated on July 16th, and the former pain, the cataleptic seizures, the uterine hemorrhages, trismus, etc., disappeared immediately after operation and did not return. The appendage was removed on both sides.

Bruntzel (*Archiv f. Gynäkol.*, vol. xvi.). Case of hystero-epilepsy in which after careful consideration the ovaries were also thought to be the seat of the condition (in Spiegelberg's clinic). The operation was a complete failure. (The case seemed just as clear as some of the successful cases reported; the ovaries were pathological.)

Jas. Israel, in a paper before the Berlin Medical Society on January 14, 1880 (see *Berliner klin. Wochenschr.*, 1880, p. 242) describes a case of severe hysteria in a patient aged twenty-three, who

had the usual symptoms of this nervous condition (for which see the original article) and who had been advised by eight different gynecologists to have her ovaries removed. A sham operation was done by Israel on December 31, 1879, consisting of an incision through the skin, and again suturing it. The result was a complete success up to the middle of March, when Israel heard last from the patient.

Freund, in Strassburg, operated one time for hystero-epilepsy with a cure resulting. Many more cases could be related, but it would take up too much time, hence I will now quote my own experience which is limited to the following cases.

Case I.—L. O., aged twenty-four years; married six months; never pregnant; menstruation began at twelve years; ill since her fifteenth year. The complaint is that two weeks prior to the menstrual period nocturnal epileptic convulsions were present; and from her history it seems that attacks of petit mal began soon after the appearance of the catamenia, but the grand mal later, as stated above. These attacks came on more and more frequently from year to year, so that during the past year she could count upon one to three attacks per night for several days preceding the flow. If a convulsion occurred during the flow, the pains in the ovarian regions were very severe. Frequently a distinct aura from the ovarian regions preceded the convulsion. She menstruated regularly every four weeks, the flow lasting from four to seven days, losing much blood during the first two or three days. During the flow she had pain in the sacral, lumbar, and ovarian regions. The uterus is anteflexed; both folds of Douglas thickened, drawing the cervix up and backward; perimetritis posterior. Both ovaries are prolapsed and very sensitive; pressure on either ovary brings on a feeling as though the patient would get a convulsion. Years of medicinal treatment likewise without result, consequently inasmuch as to me the origin of the epileptic seizures seemed to be in the ovaries, these glands were removed on March 7, 1885, by abdominal section. Now, I would operate *per vaginam*. Immediately after and for some months subsequently to the operation no change was noticed, but gradually the attacks diminished in severity and frequency, and now already more than a year has elapsed since the last attack; no medication having been used during the past four years, hence it is reasonable to suppose that the woman is cured.

Case II.—M. R., aged twenty-nine years; had one child when twenty-one years old; no abortions nor miscarriages. Menstruation began at sixteen, and was regular without dysmenorrhœa until her present illness, which dates from her confinement. The manifestations are more or less constant pain in the right ovarian region, most marked on exertion; intense dysmenorrhœa; the pain begins one day prior to the flow; the latter is irregular, at intervals varying from three to five weeks, and lasting usually four days; a moderate amount of blood is lost; profuse and constant leucorrhœa is present. Before and during the menstrual flow, occasionally also immediately after its cessa-

tion, the patient had frequent attacks of epilepsy (grand mal), which were *invariably* preceded by an aura radiating from the *right ovarian* region. For the latter the patient had been under the care of several general practitioners and one noted neurologist, without any relief. Examination of the pelvic organs showed a retroversion of the cervix (called anteflexion by Thomas and most other authors); laceration of the portio vaginalis on the right side; a prolapsed and *enlarged right ovary* and tube, very sensitive to touch; the left appendage normal. Invariably on bimanual examination, when the right appendage, or rather the right ovary, was grasped between the examining fingers, the patient would experience, besides the pain, or simultaneous with it, a faint and dizzy feeling (petit mal). Sometimes a cataleptic state was produced, and on two occasions an epileptoid fit. After a long course of local treatment, trachelorrhaphy having also been performed, in addition to the continuance of the bromides, salpingo-oöphorectomy was resorted to on November 29, 1885. The Fallopian tube was enlarged to double its normal size, and the ovary also enlarged, and contained many small cysts from the size of a pin's head to half the size of a pea. The abdominal wound in this case, as in the other cases in which laparotomy was done by me for the condition under consideration, healed by first intention; in all, the recovery from operation was uneventful. For a short time subsequent to operation she was free from the epileptic seizures, but gradually they returned, and are now the same as before operation; for some time they were even more frequent and severe than formerly.

Case III.—C. N., aged twenty-eight years; married eight years; three children, the last six months previously; no miscarriage; no abortion. The first two labors normal; the last was a precipitate labor, from the first initial pain to the time of full delivery occupying less than five minutes. Her illness dates from that period.

Symptoms. A feeling as though her teeth were coated; disagreeable taste in the mouth; a feeling as though she were resting on wires; very restless; nervous; extremely irritable; frequent attacks of weeping; worries very much; globus hystericus; tongue feels as though double its normal size; all objects seem to be much larger than they are in reality; double vision; pain at base of head; tachycardia; lumbar pains; nearly constant pain in the ovarian regions; hypogastric pain is constant. About the time of the menstrual period all the above symptoms of hysteria would be much increased, and were accompanied by frequent epileptic seizures. On the least mental provocation an attack of hystero-epilepsy would be produced. Bowels move several times every morning. No bladder symptoms, except when near the catamenia, when micturition is frequent. The patient menstruates every two or three weeks, the flow lasting one week; large amount of blood is lost; pain in the right ovarian region being increased before and during the flow to such an extent that the patient is unable to be about. There is a constant, thick, and offensive leucorrhœa.

Examination. Perineum lacerated; cervix lacerated; uterus enlarged and sensitive to touch; physiological anteflexion; *right tube and ovary much enlarged, prolapsed, bound down by peri-metritic adhesions, and very sensitive; pressure on the ovary brought on a hysterical convulsion.*

Treatment. Thorough curetting and repair of lacerations; proper hygienic surroundings; diet: bromides; valerianate of zinc; no improvement. On February 12, 1886, the abdomen was opened and the right appendage removed. Macroscopically it was similar to that of the previous case. After the operation the nervous symptoms rapidly disappeared, so that in six weeks not one was left: she did not have one convulsion after removal of the respective adnexa. The pain in the right ovarian region also gradually diminished to make its complete disappearance before the end of that year. I hear from the patient about once in from three to five or six months, and she is a perfectly well woman.

Case IV.—A. L., aged seventeen years; menses began at thirteen years; regular; dysmenorrhœa. Epileptic convulsions began soon after the catamenia set in and are of frequent occurrence near and during the menstruating period, with aura proceeding from the ovarian regions. The pelvic organs were apparently normal, except that when the ovaries were palpated the patient would invariably be thrown into a hystero-epileptic convulsion. Time and time again, before and on admission to the hospital, also several times during her stay before operation, this experience was gone through. The attacks were so frequent about the catamenial period that the patient was becoming a wreck, physically and mentally. Treatment was of no avail. Laparotomy was done on May 14, 1888, and the adnexa removed. The patient had no more attacks for some time subsequent to operation; then they returned again, and she was in precisely the same condition as before operation. However, quite recently, in November or December, 1891, her physician informed me that although she suffered, off and on, from hysteria, the convulsions had disappeared entirely, and she was physically in excellent condition. This case, then, I should consider as very much improved, and I believe that she will ultimately be so that a cure can be reported.[1]

Case V.—D. N., aged thirty-eight years; married twenty-one years; never pregnant. For several years (ten to twelve) she has been suffering with attacks of hystero-epilepsy about the menstrual period, which have been increasing in intensity and frequency constantly from year to year, and were preceded frequently by an aura, which came sometimes from the left ovarian region. Both ovaries were low down and bound to the floor of the pelvis by slight adhesions, as verified also at the time of the abdominal section, which was done on June 14, 1888. For a few months subsequent to the removal of the adnexa it seemed as though the patient would get entirely well, the attacks having become much diminished in severity and number; however, the improvement did not continue, and she is not an iota better than before; on the contrary, worse.

Case VI.—D. M. was seen in consultation with Dr. Gordon in Beth-Israel Hospital; aged twenty-two years; married two years; nothing prominent in the previous history, as given to me by Dr. Einstein, the house-physician, except that she always had dysmenorrhœa. She had one child, fourteen months previously, which was taken with forceps. The confinement was followed by puerperal fever. After recovering she was, after the lapse of three

[1] Patient was seen February 27, 1892. She was in excellent condition, and has no more fits.

months, admitted into Bellevue Hospital, where she was curetted five times, having a bloody, purulent discharge from the uterus. On June 14th she was again taken sick with chills, fever, and intense abdominal and lumbar pains. She received a hypodermic injection of morphine to relieve the pain, when admitted to Dr. Gordon's service, and the prick of the needle produced very severe convulsions, which were diagnosed to be epileptoid. Subsequently these convulsions also came on very often and were most intense, no kind of treatment alleviating them. On June 28, 1891, I saw the patient, and the following notes, taken by the house-physician, were recorded on my examination: Perineum torn slightly; bilateral laceration of cervix without ectropium. The uterus is crowded forward by a tumor behind and to the left, which was irregular in the outline, extended to the right of the uterus, firmly adherent to floor of the pelvis and the uterus. Ureters normal as far as they can be felt. On June 30, 1891, I, with the assistance of Dr. Gordon, opened the abdomen and removed the tumor, a tubo-ovarian abscess on the left side, an encapsulated retro-uterine hæmatocele, and right salpingo-oöphoritis. The operation was unusually difficult, on account of intestinal and other adhesions. A few hours after the operation the convulsions again became very intense and persistent; but when, after the use of chloral hydrate *per rectum*, they were controlled, they returned no more. I saw the patient during convulsions, and they were the characteristic epileptoid fits. She is now, from a former bedridden subject, unable to do anything, a strong, healthy person, and has never had a return of the fits with which she suffered so intensely formerly.

The conclusion from the cases cited certainly proves that there are cases of hystero-epilepsy which are absolutely cured by removal of the adnexa; it also shows, however, that, although both symptoms and examination point directly to the adnexa as the cause of the epileptoid fits, the result gained by their removal disproves it, as Case II. in my own series.

I would form as an indication for removal of the adnexa for the cure or improvement of hystero-epilepsy, that all other treatment generally used for the relief of epilepsy has been negative in result; that the patient's condition has gradually become worse; that such pathological changes exist in the pelvis, *i. e.*, adnexa, which can be readily ascertained, and that the epileptoid fits must obviously be found to have some connection with such diseased condition and menstruation. If the operation is contemplated in a case when the appendages are not grossly diseased, I deem it necessary that there should be epileptoid fits at times upon palpation of the ovaries, and invariably the manifestations of an attack when such palpation is made; that the seizures should be most intense about the menstrual period; that if an aura exists, it should proceed from the ovarian

region ; that all the other causes must be positively eliminated : that the patient must have been under observation under a very experienced observer to determine this, and that she should have been under the care of a neurologist or seen by him in consultation. Never is it permissible to do an operation of this kind without first clearly stating to the patient in the presence of witnesses what the results will be and of what the operation consists, and also the fact that there is a possibility of the operation being a failure for the condition for which it is undertaken, if it be done solely for the cure of the hystero-epilepsy. The operation should never be done unless sanctioned by an experienced gynecologist, who has himself observed the patient sufficiently long to arrive at a conclusion, which cannot be done in one, two, or three consultations ; neither should it ever be performed by any one who is not an experienced abdominal surgeon.

Even the most experienced will sometimes err in the result of their opinion ; it is therefore that I demand such great amount of care in this operation for this nervous disease. These requisites hold good also for all neurotic conditions for which removal of the adnexa is contemplated.

The removal of the adnexa may be accomplished either *per vaginam* or by abdominal section, according to the respective case.

My opinion, then, is, that we know nothing positive about what the result will be in any case. I only maintain that the operation is justifiable in some cases.

XVII. Discussion on Removal of the Uterine Appendages for Hystero-epilepsy.

By JOSEPH PRICE, M.D.,
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In my own work I have operated thirty-two times, with varying degrees of success. The condition of the patient, her history, the length of time the seizures have been noticed, all form an essential part of any consideration of her case. In operating in this, as in other conditions, it is first necessary to determine how far the disease is inherited, how far it is acquired, or has grown upon the patient. Epilepsy, whether it is hysterical or not, when

it is in no wise connected with the menstrual function, should not be considered in the light of a disease remediable by interference with this function. I take it that in all surgical affections the extent, nature, and degree of disease should be appreciated before operation is undertaken, unless we start out with the intention of doing an exploratory, to determine and settle the diagnosis. The hysterical element of epilepsy, all in all, I think it is generally acknowledged, gives us more hope of remedying the disease. Now since this is true, it is necessary to look carefully into the history of the case to decide whether it has been a preëxisting epilepsy, on which the hysterical element has been grafted, or whether the disease has been hysterical from its incipiency. If the hysteria is simply an increment of the disease, what are the nervous impulses due to from which it is derived? If, then, the disease seemingly arises from a disturbance of the nervous coördination powers, at the initiation of menstruation, carefully consider all sides of the disease and ascertain how far the attack is simply one of irritation, and how far of disease. If one of irritation, this may often be relieved without absolute removal. For instance, if stenosis causes the irritation, relief of this symptom is sufficient to restore the equilibrium of nervous coördination. So, again, if there is dysmenorrhœa, or menorrhagia, existing simply as such, without definite lesion, treatment of these conditions symptomatically must first be the effort of legitimate gynecology. In the event that these resources fail there is a far wider question to consider. We must look for the absolute relation of the menstrual function as such, apart from everything else, in the causation of the disease. If, at the beginning of menstruation, there has been an on-coming of the hystero-epileptic attacks, and this has continued or grown worse, as time has progressed, so that there is really as well as inferentially a connection between the function and the attacks, then it must be considered whether in the absence of the function, or during its intervals, there is immunity from the nervous symptoms, or cessation in part, or reduction in their severity. If there is found any one of these favoring circumstances, operation may be considered. And in looking toward an operation, examination must be made to determine either the presence of actual disease or to determine whether the ovarian region is an epileptic zone—that is, whether manipulation, pressure, or impacts over the ovarian region produce epileptic seizures. In this condition, if there is

actual disease, I would insist upon the removal of the parts as giving the patient a possible chance to regain her mental and normal nervous integrity. We must consider that in these cases we have a gradual, sometimes rapid, degeneration of the powers, and that the medical treatment most frequently results in a mental or moral hebetude that is well-nigh sickening. From this standpoint, the consideration of sex is of no import whatever, and hence the cry of unsexing as barbarous can only be uttered by the unthinking. It were far better if all epileptics were asexual, and I believe it would also be far better if all cases within a certain degree could be rendered so. No one of us with an epileptic in our family, or acquaintance, or clientèle, can help feeling that all in all the patient would be better were he out of his suffering, and we all shudder at the thought of the procreation of a race such as he.

But it is unnecessary to pursue this phase further; it comes under the head of ethical philosophy, not surgery, and the time is not yet ripe for so wide an application of the laws of self-defence. In single women, when the epileptic spasm is worse during menstruation, more frequent, and having duration of the seizures, it is important to notice whether this state of affairs is uniform, whether it depends upon the function or on accidental causes. If the exacerbation occurs only at the time of the catamenia, if during the intervals there is absolute rest from them, then it should be considered that operation is justifiable as a remedy for an absolutely causal relation between the function and the disease. This is true, I take it, both in the presence and absence of pathological conditions. To repeat, all pathological conditions causing derangement or irritation of the menstrual function should be remedied, by whatever surgical procedures are necessary for the abatement, mechanical or functional, of the complaint, and if there are no such mechanical conditions existing, the nervous symptomatology itself must be taken under consideration.

Now, in married women we have still another condition to aid us, or at least to consider. Pregnancy may be looked at either in a curative or a causal relation. If a woman is seized with epileptic spasms at no time except during pregnancy it requires little reasoning to connect pregnancy with the seizures, and steps should be taken to avoid it. If, on the other hand, a confirmed epileptic is free from her spasms during her pregnancy, if these are also held in abeyance during lactation, and if they again recur when lactation is

over and menstruation has returned, we are justified in considering the ovarian influence as causal in reflecting upon the treatment of the disease. These cases, I think, well define the limit of operation for a condition whose origin is often so obscure. Outside of well marked intimate relation between the disease and the pathological conditions of the ovaries and tubes, I think it is the better practice to abstain from surgical interference. This I urge in the interests of surgery, for in all that belongs to abdominal surgery is there not enough to complicate it and cumber it without adding to it anything that cannot be held to belong to it, and which failing in, will make its position a questionable one to many who are still too ready to criticise it? The study of the surgical results of cases operated upon must really go far to determine the question of justifiability, and until statistics are more exact and numerous, the question must be held *sub judice*. Granting that the operation is justifiable, if the results are not satisfactory there is little comfort in doing work, without hope of accomplishing the intention of the operation. We have, however, the surgery of epilepsy outside of gynecology to encourage us in many directions, and when we consider, that as compared with medicine, the surgical treatment has been much the more brilliant and satisfactory, encouragement should be taken in the line of gynecology. In the male, circumcision often is a cure for otherwise uncontrollable disease, and the same has been found in the treatment by excision of neuromata, scars, both of the brain and other localities. It is true that the cure of epilepsy from brain injuries has not been as permanent as is desired, but theoretically it has been efficient to relieve the attack until sufficient time has again elapsed for the reproduction of scar tissue.

The other conditions in general surgery might be referred to, but they are so well known that sufficient has been given to justify the analogical removal of the uterine appendages in the disease under consideration, and under the limitations prescribed.

XVIII. Vaginal Hysterectomy for Cancer.

By ERNEST W. CUSHING, M.D.,
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The total extirpation of the uterus for malignant disease has become so common of late years, the technique is so well understood, and the results are so satisfactory, that it would seem unnecessary to say anything in defence of the operation were it not that it is still occasionally attacked by persons of more or less authority in the profession.

When at the Ninth International Medical Congress in Washington, in 1887, August Martin, of Berlin, reported his cases, and called the attention of the profession to this operation and its results, a severe attack was made on his position by Dr. Reeves Jackson, of Chicago.

The question was fully discussed, and apparently a general consensus of opinion in favor of the operation was established. A great number of cases were afterward reported, and with increasing experience the results, both as to recovery and as to immunity from relapse, became vastly better, so that at the Tenth International Medical Congress, held in 1890, at Berlin, the operation was accepted as fully established in principle, and the only questions arising were those concerning methods of limitation and ultimate results.

But now comes Mr. Tait, in his work on *Diseases of Women and Abdominal Surgery*, and with characteristic dogmatism and a positiveness of assertion which is quite Taitesque, says:

"The proposal to deal with cancer of the uterus by complete removal of the organ meets, I need hardly add, with my strong disapproval. My reasons are that its primary mortality must always be heavy, and that the few cases in which the disease does not recur are clearly errors of diagnosis. Further, operation for a disease which gives unjustifiable secondary results has no place in good surgery, and it complicates in the confused mind of the public the issue of electing to have operation performed, the secondary results of which are perfect. As I like my work to be stable, I always oppose this cutting out of the uterus for cancer, and my first judgment has been confirmed by the result."

Now, those who make sweeping assertions, and lay down dogmatic conclusions, are not wise in publishing reasons. Their authority might pass unquestioned—*Stat magni nominis umbra*—but their reasons are subject to criticism, and in this case I do not hesitate to say that Mr. Tait's conclusions are founded on mistaken premises

In the first place the primary mortality is not always heavy ; in the hand of men of skill and experience it is very small, and even then the deaths are usually in cases which come under operation after unjustifiable delays.

The second proposition, that cases which do not recur are due to errors in diagnosis, is a simple insult to the judgment of all operators who differ with Mr. Tait, and to the pathological knowledge of the whole modern scientific world.

The third reason is not only mistaken but unjustifiable; it is simply a refusal to give Mrs. A. a chance to have her life saved by vaginal hysterectomy for cancer, for fear that if the disease recurs in Mrs. A. it will discourage Mrs. B. and Mrs. C. from submitting to an operation for pyosalpinx, or ruptured tubal pregnancy, or some other proper and necessary operation. I fail to see how any surgeon has a right to deliberately refuse succor to the individual in order that other and unknown persons may perhaps in the end receive greater good.

These remarks have been prompted by a recent leading article in a journal published in this State, in which the author, Dr. Evans, of Saginaw, Mich., supports the views of Dr. Tait, and sheltering himself behind the authority of the latter proceeds to attack not only the judgment but the motives of surgeons who perform vaginal hysterectomy for cancer, and in quoting statistics has fallen into egregious error, in at least one case, regarding those of August Martin.

This paper, and the prominence given to it, show that there are still those who are willing to let their theory of the constitutional nature of a supposed cancerous diathesis warp their judgment as to methods, and distort their conclusions, which should be founded on facts rather than on ancient theories.

I will not pursue this question further, but will briefly touch on some points of general interest of a strictly practical nature, and after reporting my experience will call on those present to report the results of their operations, assuming that if with a low primary mortality the life of women stricken with cancer of the uterus can

be prolonged for months or years, and in a large proportion of cases saved entirely, the operation is justified by the facts, all theory to the contrary notwithstanding.

On this occasion, and with a limited time at our disposal, I shall say little concerning the technique of vaginal hysterectomy, but will merely discuss the general questions involved, such as the indications for the operation, the choice between total and partial extirpation of the uterus, and the limitations and results of the latter operation.

Diagnosis.—Although it is often very easy to make a diagnosis simply by gross appearances, which are sufficiently familiar to all experienced physicians, yet unfortunately when the diagnosis has become easy the disease has usually progressed to a stage where operation is difficult or perhaps impossible. An early diagnosis is therefore particularly desirable, for in the incipient stages of this disease total extirpation is easy and safe, and gives excellent chances of permanent recovery, while if delayed too long the operation is formidable and difficult of accomplishment, while the chances of recurrence are so great as to discredit the operation and almost justify the expression of Mr. Tait, referred to above. It has been claimed that when cancer is discovered early, and is limited to the vaginal portion of the cervix, the partial operation is all that is necessary, and this opinion has been supported by the statistics of Schroeder and Hoffmeier, which show greater immunity from relapse after high amputation of the cervix than after total extirpation of the uterus. These statistics, however, are sufficiently explained by the fact that Schroeder and Hoffmeier reserved total extirpation for cases which were so far advanced or so situated that simple amputation of the cervix would not be sufficient while the latter operation was performed in the early cases, and in those which were least likely to recur. The consensus of opinion among surgeons is now, however, decidedly in favor of removing the whole organ whenever the diagnosis of malignant disease is clear. I accept this view of the case without hesitation, as I believe that total extirpation is neither more difficult nor more dangerous than the really *high* amputation of the cervix, and that it affords greater immunity from relapse. The only cases where the question is debatable are those of cancoid (epithelioma) of the vaginal portion of the cervix, while in cases of carcinoma of the mucous membrane of the cervix, or of carcinomatous nodules of the cervix, or in malignant disease

of the fundus, it is agreed on all hands that total extirpation should be performed as soon as the disease is discovered, if fortunately the diagnosis is made before it is too late to operate. It is important to remember that while an accurate distinction of the seat and nature of malignant disease of the cervix is easily made after the specimen has been removed, yet in any given case it is not possible to decide how far up in the uterus the disease has extended, and therefore it is manifestly wisest to remove the whole organ on the same principle that surgeons always remove the whole mamma and even the contents of the axilla for cancerous disease of any part of the breast, preferring a slightly increased risk from the immediate effects of the operation to the terrible danger of relapse, which must be incurred in cases where too little tissue has been removed. The diagnostic symptoms of cancer of the cervix, as laid down in the text-books, such as pain, hemorrhage, and foul discharge, are referrable mostly to advanced stages of the disease, where the diagnosis is of course easy, while in the early stages there may be few urgent symptoms, and an examination will show only an indolent ulcer usually in the site of an old laceration. The ulcer is intractable under treatment, bleeds easily, has thick, uneven borders, composed of friable tissues. In general, it may be said that where the borders of the ulcer can be easily broken down with the finger, or where there are whitish pieces which crumble easily, and can be scraped out with a curette, the affection is probably malignant. In some cases the diagnosis can only be made by the microscope. It is certainly the duty of the attending physician to make a careful examination of any patient who complains of irregular hemorrhage, especially if she is over thirty years of age, and many valuable lives could be saved if physicians would examine their patients thoroughly instead of simply prescribing for the hemorrhage. Metrorrhagia and menorrhagia are not diseases in themselves, but are mere symptoms, which imperatively demand an accurate diagnosis. In doubtful cases a wedge-shaped piece of tissue should be removed for an examination by an expert; for this it is rarely necessary to etherize the patient, as the tissues, which are not very sensitive, can be benumbed by cocaine; the hemorrhage is easily controlled by styptics and gauze packing, or, if necessary, by a single stitch.

In malignant disease of the body of the uterus total extirpation is the only operation which offers any chance of cure, and therefore should be performed as soon as the diagnosis is made. In these

cases the microscope is of the greatest service, for the hemorrhage is usually a prominent symptom, so that the uterus is curetted at an early stage of the disease, and a microscopical examination of the fragment removed will throw great light on the nature of the disease. Sometimes even without the microscope a diagnosis can be made from the gross appearances of the fragments, which are whitish, thick, and friable, and entirely unlike hypertrophic mucous membrane. Very frequently, however, the disease can be detected at an early stage, where even the microscope does not show carcinoma, but where there is an adenomatous thickening of the mucous membrane of the fundus. In these cases, after the menopause has been established perhaps for several years, irregular hemorrhages begin, which are usually relieved by curetting. This operation has to be repeated many times, at intervals of a few months, very considerable masses of tissue, resembling mucous membrane, being removed, which under the microscope are found to be composed almost entirely of glands, with very little intervening connective tissue. All these cases eventually terminate in carcinoma, and therefore total extirpation should not be delayed, although I have known the radical operation to be discountenanced by a pathological expert, who misinterpreted the microscopical appearances as implying a benign hyperplasia of the uterine mucous membrane.

It is much to be regretted that hemorrhages occurring after the time of the menopause are not regarded more seriously by the patients or their medical advisers, and it is of the utmost importance that women should no longer believe that irregular and repeated hemorrhages occurring during and after the change in life are to be considered as merely natural events, whereas in reality they are too often the early symptoms of the gravest form of the disease.

I have now performed the operation of vaginal hysterectomy 31 times, in every case except one for cancer or malignant adenoma of the uterus. The youngest patient was twenty-six, the oldest sixty-six years of age. All the patients recovered from the immediate effects of the operation, except two; one of these who was operated upon in another State, and was not seen by me after the operation, died at the end of a week with symptoms of peritonitis, with very obstinate vomiting; one patient, operated on in a distant portion of Massachusetts, died on the fourth day, without fever, apparently from

simple heart failure. This was the only death in the last twenty cases from the immediate effects of the operation, and neither of these cases was seen by me after the operation. Another patient, one of the early cases, where the disease had invaded the left broad ligament, so that the clamps had to be applied to unhealthy tissue, did very well for ten days, so that she was considered out of all danger. She felt so well that without permission she sat up in bed to take her supper. The same night the patient in the next bed heard her make a strange sound and saw her make a convulsive movement. The night nurse, who quickly went to her bedside, found her dead. No autopsy was made, but it was thought probable that death was attributable to embolus from a detachment of a clot in the stump.

In regard to ultimate results, subtracting from the whole number of 30 cases the 2 who died from the operation, and 3 cases, including the one above mentioned, where the whole of the diseased tissue could not be removed, and one of which died, there remain 25 cases in which with greater or less difficulty the whole uterus was removed and the clamps applied to apparently healthy tissue. Three of these operations have been performed within the last nine months, and are therefore unavailable so far as regards the question of recurrence. At any rate the patients are doing well so far. Of the 22 other cases which recovered, and which have been operated on for a year or more, 5 are dead and 2 will soon die from recurrence of the cancer. The other 15[1] are in excellent health, as well as the 3 recent cases above referred to. With a single exception, already mentioned, the convalescence was extremely easy and uneventful. There was no elevation of temperature or any sign of peritonitis.

In regard to the technique of the operation, I will not occupy much of your time. I formerly always used clamps instead of ligatures, not only because thereby the operation was shortened, but because the weight of the handles insures thorough drainage, and the tissue seized by the clamps can be crushed and the lymphatics obliterated before the scissors are used, thus diminishing the chances of cancerous infection of the lymphatics of the stumps and broad liga-

[1] The pathological specimens and microscopical sections of my first 19 cases were exhibited before the Obstetrical Society of Boston, March 14, 1891, in order that there might be no question as to the accuracy of the diagnosis. All the specimens have been preserved up to date, and all have been examined microscopically and show the well-known appearances of cancer.

ments, and permitting the severance of the latter further from the uterus than would be possible by the use of the ligature alone. Lately, however, since seeing Olshausen operate in Berlin, I have in a number of cases used catgut ligatures, tying off the broad ligament in several sections. Instead, however, of closing the wound in the roof of the vagina, as Olshausen does, I have left it open and secured drainage with iodoform gauze.

I have brought here a few of the uteri removed by total extirpation in the cases above referred to. An inspection of these will give, better than any description, an idea of the condition of the cancerous uterus; of the tendency of the affection to extend above the internal os; of the varying distances, both in front and behind, at which the peritoneum is resected from the body or neck of the uterus; of the adhesions which may tie down the fundus or hold the tubes and ovaries fixed, thereby greatly complicating the operation and rendering it extremely difficult. Of all these 31 cases, I can only remember 5 where the organ could be easily drawn down and the clamps applied with the facility described in some accounts of the operation; in 2 cases there were present small ovarian tumors, which were removed through the vaginal opening—1 was a dermoid, 1 a multilocular cyst.

There are certain limitation to the operation of vaginal hysterectomy, which must be carefully observed, for if unsuitable cases are subjected to this operation not only is the immediate risk enormously increased, and the operation itself rendered formidable and sanguinary, but the probability of relapse becomes so great that the operation itself is discredited. The first contra-indication is serious disease of other organs, especially of the heart or kidney, or the presence of such great weakness from cachexia or loss of blood as to render it improbable that the patient can withstand the shock of the operation. The latter condition, however, can often be overcome by preliminary operation, whereby the diseased tissues are removed by the curette and cautery, so that after a few weeks' rest in bed, with proper care and good food and tonics, the patient is in a condition to undergo the radical operation. When this is to be performed, the first point is to ascertain whether the disease has invaded either broad ligament to such an extent as to have passed beyond the point where the clamps or ligatures can be applied. This point can usually be determined by examination through the rectum, especially when the uterus is drawn down by forceps;

when the uterus cannot be drawn down, the operation will certainly be difficult, although the adhesions which hold the organs may not be malignant in their nature, but the result of old pelvic inflammation or of diseases of the uterine appendages; when the cancerous affection has involved the vagina or the tissues about the rectum or bladder, to any considerable extent, vaginal hysterectomy is contra-indicated. In all such cases, it is not to be inferred that surgery offers no prospect of relieving suffering and prolonging life. By careful removal of the diseased tissues and thorough application of the thermo-cautery, the condition of the patient can be very much improved, and in some cases life can be prolonged for several years, although usually a respite of six or eight months is all that can be expected from such palliative treatment.

Thirdly. There must be sufficient space in the vagina to permit of the delivery of the tumor where this is large. In cases of malignant disease of the body of the uterus in unmarried women it is often impossible to remove the uterus through the narrow vagina, and in these cases, after curetting and cleansing the cavity of the uterus, the os uteri may be closed with stitches and the vaginal connection severed, and then the abdomen must be opened and the whole of the uterus removed from above. Such a procedure, however, does not come within the scope of this paper.

DISCUSSION.

Dr. H. J. Boldt, of New York: It is about time that operations for cancer of the uterus which do not include the entire removal of the organ should be abandoned. In a large number of cases in which the cancer seems before hysterectomy to be limited to the cervix, further examination of the organ after its removal has shown nodules in the body. One such case is sufficient to prove the impropriety of only part removal of the uterus. It is not reasonable to suppose that removal of a portion will render the patient less liable to a relapse than removal of the entire organ, as has been asserted by some. While carcinomatous infiltration in the broad ligaments should be considered a contra-indication to hysterectomy, simple inflammatory infiltration is not. There is a difference to the touch in the two conditions, there being more elasticity in inflammatory infiltration.

Regarding primary results, I have had three deaths in about thirty-

three hysterectomies, but I attribute the fatal result to the operation in only one instance. As to the use of clamps or ligatures, I have used the latter when practical, but would not waste time in trying to apply them when clamps are at hand in cases of immobile uterus.

Dr. Joseph Price, of Philadelphia: I have never had a patient refuse extirpation of the uterus for cancer, when the question of total removal or high amputation was presented fairly to her. I think it not unlikely that Mr. Tait, who was referred to in the paper, will yet change his position with regard to hysterectomy for cancer, as he has once done with regard to supra-vaginal hysterectomy for fibroids. As to relapses occurring after high amputation according to the Baker method, two patients have come to me for hysterectomy after recurrence following high amputation performed by most able men. While admitting that all forms of hysterectomy are difficult, I am frank to say that I urge entire removal, both early and late, provided the cancer has not gone beyond the limits of surgery. I make my incisions an inch or more beyond the disease, and also remove the uterine appendages. The latter are often the seat of disease antedating the cancer, and this may in some cases be the cause of subsequent obstruction of the bowel, which has been wrongly attributed to the hysterectomy. Recurrences, in my practice, have been very rare, yet I performed my first hysterectomies for cancer not later than six years ago. So far as I know, there has been a recurrence in only one of my cases out a total of forty-seven. My experience has differed from that of some regarding the class of women in whom cancer of the uterus develops. Dr. Emmet and others have spoken of its absence in virgins, yet in my last ten cases only one patient ever carried a child to term; a few have had abortions, the others have never conceived. In my hands hysterectomy for cancer has been very successful; I have lost but one patient out of forty-seven operated upon. In that one the nurse gave an enema four days after the operation and perforation of the bowel took place, causing death; the autopsy showed advanced malignant disease of the descending colon at the point of perforation. The operation, therefore, was not the cause of death.

XIX. Amputation of the Vaginal Portion of the Cervix Uteri in Cases of Suspected Carcinoma.

By ANDREW F. CURRIER, M.D.,
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Perhaps it would be better to say *provisional amputation*, or "exploratory excision," as Müller styled it in a paper written in 1884,[1] the idea being that the operation is to be performed to enable one to complete a diagnosis which is incomplete and unsatisfactory without it. The object of the operation is also to avoid the alternative of removing the entire uterus, and finding that the carcinoma was only a suspicion existing in the mind of the operator, which certainly does not magnify the wisdom or judgment of the latter, and leaves the patient unnecessarily mutilated, even if she escapes with her life. As has already been intimated, the idea is not a new one, but I am not aware that the operation has been practised to any considerable extent for the purpose of verifying a diagnosis of carcinoma of the vaginal portion. It is suggested because of the inconclusive results which so often attend the examination of scrapings from the endometrium, and even of small portions of the cervical tissue itself. If a segment of tissue large enough and long enough to reveal the vital condition in the entire length and breadth of the vaginal portion be removed from any except very large organs, in which case amputation or trachelorrhaphy will frequently be indicated, whether there be malignant disease or not, the resulting wound will quite destroy the symmetry and usefulness of the organ, and may necessitate amputation, which might better have been determined upon at the outset. With the entire vaginal portion removed, we are in a position to study the extent of the disease, if disease exists; to decide with a greater degree of certainty, by the preparation of many sections if necessary, as to the virulence of the disease, and either to interfere no further surgically, or to perform hysterectomy if the conditions warrant such an operation. To a certain extent the proposition is analogous to that which is meeting with no little approval among general surgeons, namely, to precede resection of the intestine by colotomy.

[1] Ann. Soc. de Méd. d'Anvers, 1884, xlv. 235.

The position which I take is entirely in harmony with the view which I have held and expressed for years, that upon early diagnosis must we mainly depend for the successful surgical treatment of malignant disease of the uterus. This point cannot be too often repeated, nor too strongly emphasized, and the gynecologist cannot insist too vigorously that the general practitioner should seek advice whenever he finds a patient suffering with a stubborn erosion or ulcer of the mucous membrane of the vaginal portion, or with hemorrhage from the endometrium, for which he cannot satisfactorily account. But this position is aside from the question of precision in diagnosis, which, in many cases, will only be attained by the performance of the exploratory or provisional operation to which I have alluded. Excluded from consideration at the present time are all those cases in which the existence of malignant disease is so unmistakable, both clinically and microscopically, that no time need be lost in provisional procedures. For such I would advocate, as I have done for years, the immediate total removal of the uterus and its diseased surroundings, or the palliative operation with scissors, curette, caustic, and cautery, if radical removal is impossible. Two motives have influenced me to the discussion of this subject in a brief paper. The first is that, in common with many other gynecologists, I frequently see cases which make me suspicious of the presence of malignant disease of the vaginal portion of the cervix uteri. As already stated, the examination of scrapings and bits of tissue in such cases is often very inconclusive, and upon such evidence one should hesitate to recommend to a woman the dangers of a grave operation, the resulting mutilation and deformity, and the interference with important functions. The second is that operations have been performed, uteri and adnexa removed, only to find that there was no serious disease present in the organs. Naturally enough the history of such cases is never published in all its details, the specimens are seldom shown at our Society meetings, and he would be a very courageous or a very ignorant man who would run the gantlet of the criticism which the presentation of such specimens would call forth. But there is no man so acute in his judgment, nor so skilful in his operative work, that he can afford to ignore the lesson which such experiences, real or potential, teach, namely, that careful diagnosis is at the bottom of all good work in the field which is under consideration.

Among the conditions which render diagnosis difficult with reference to the presence or absence of malignant disease of the vaginal portion may be mentioned the following:

1. Endometritis, with or without hemorrhage from the interior of the uterus.

2. Hyperplasia, with or without fissure of the os, and endometritis.

3. Erosions, ulcers, and glandular disease.

In other words, the conditions which must always call for careful attention in connection with disease of the vaginal portion are hemorrhage, infiltration, and ulceration, and the conditions which are kindred to or suggestive of them.

1. Endometritis is a comprehensive term. In its ordinary acceptation, in which there is merely a catarrhal condition of the endometrium, it does not excite apprehension of any serious pathological disturbance. It is the most common of all the disorders of the endometrium; there are few women who have experienced the pregnant state who do not suffer with it, and I am satisfied that we frequently attach greater importance to it than is warranted by the actual condition of affairs. But if the condition be one of active inflammation, with a constant discharge of pus, or of pus mingled with blood, it is neither simple nor harmless, and calls for serious investigation as to its cause and the proper means for its relief. It may be entirely unaccompanied by pain. There may or may not be a certain degree of debility resulting from the discharge. But in any case the endometrium should be thoroughly curetted, the tissue being scraped away to the submucous tissue, and the scrapings carefully examined. As has already been stated, such an examination frequently shows us nothing but the evidence of an inflammatory process, or it may leave us in doubt whether there is not also the existence of a neoplasm. If, after the lapse of a few weeks, there is no evidence of improvement, the discharges of pus, blood, and epithelium continuing, we are justified, as the next step in the treatment, in amputating the vaginal portion, which will yield us material for determining with greater certainty as to the extent of the disease, and we can then decide whether all necessary operative procedures have been adopted, or whether we should take steps of a more radical character, and remove the entire uterus. If the disease proves to be purely inflammatory, or is very limited in its extent as a malignant process, no harm will

have been done, the uterus will still be enabled to perform its customary functions, and we will have been placed on our guard for subsequent developments. I have known of cases of this kind which have retained their suspicious, semi-malignant character for years, which have been held in check by curetting performed at sufficiently frequent intervals, and which have never enabled one to say with certainty that there was sufficient severity of the symptoms to warrant complete removal of the uterus. I have had cases in which the vaginal portion was amputated, and in which the microscope showed that the malignant disease was limited to an area well below the plane of section. Of course, one must not ignore the fact that the corporeal endometrium may be the seat of disease simultaneously with that of the cervix, perhaps even to a greater extent than the latter. Such cases unquestionably require the radical operation, and our investigation should not be limited to any one portion of the organ in determining the extent to which it is the subject of a disease process. The endometritis with hemorrhage, which results from abortion, retroflexion of the uterus, and the presence of submucous myomata, has not infrequently given rise to the suspicion of malignant disease of the vaginal portion. I have seen illustrations of all these conditions in which such a suspicion was aroused.

2. Hyperplasia of the vaginal portion may be suggestive of the infiltration which accompanies malignant disease. I have seen such a suspicious condition in both nulliparous and parous women. The mucous membrane may be smooth and apparently healthy, and the endometrium show nothing abnormal or only a slight catarrhal condition, and yet the unusual size of the vaginal portion suggests the possibility of a neoplastic process. I can recall such a case in a nulliparous woman, in which the vaginal portion was amputated more than three years ago, nothing more than an excess of connective tissue being found in the specimen. The body of the uterus is still very large; the patient continues to suffer with dysmenorrhœa, and it is yet undecided whether she is afflicted with a slowly progressing interstitial inflammation or with an adenoma, which may yet require radical measures.

In the cases in which there is not only enormous increase in the size and density of the vaginal portion, but fissure of the os as well, with eversion of the endometrium and possibly endometritis and hemorrhage, the suspicion of malignant disease is often a

reasonable one. It is this class of cases in which the nutrition is so perverted that suggested to the mind of Emmet years ago the possibility of the development of carcinoma upon such a foundation. I believe that with these conditions such a development frequently does occur. At any rate amputation should be performed, and the diagnosis can then be determined. Amputation, in my experience, is preferable in such cases to Emmet's operation, for though the latter would enable one to obtain a sufficient quantity of tissue for careful microscopic investigation, the depraved character of the tissue is not conducive to good union in case the wounded surfaces are brought together by a plastic operation. Of course, this remark applies only to the cases in which the vaginal portion is very large, the fissuring very extensive, and the density of the tissue excessive.

3. Erosions, ulcers, and glandular disease of the vaginal portion are frequently mistaken for malignant disease, but in many cases amputation will not be necessary to complete the diagnosis.

Erosions are sufficiently common, and may include only a narrow circle of mucous membrane immediately contiguous to the os uteri, or may present a much more extensive area. The typical erosion of benign character is simply an accumulation of granulation tissue, which bleeds easily, like all granulation tissue, is never of spontaneous origin, and frequently disappears when the exciting cause is removed. In the great majority of cases it is caused by the discharge which accompanies endometritis, whether that be pus, blood, or mucus, and whether the endometritis be the consequence of an abortion, an intra-uterine tumor, or some other lesion of the endometrium. It is occasionally of traumatic origin, as in cases in which coitus has been violent, or in which a large and heavy vaginal portion has rested upon the floor of the vagina, and the epithelium has been rubbed off by the movements of the patient. The free hemorrhage which so often accompanies it, with the enlargement of the vaginal portion, which is also frequently present, should excite suspicion. If there is an endometritis or an intra-uterine tumor, the latter should be removed if possible, curetting should be performed, and the latter operation should include the careful scraping away of the granulation tissue forming the erosion. I have seen suspicious cases satisfactorily cleared up by such treatment, and the diagnosis of benign disease determined; but if the eroded tissue absolutely refuses to heal, amputation of the vaginal

portion will be indicated as the next procedure. Ulceration of the vaginal portion, apart from that which occurs in well-marked cases of malignant disease, may be traumatic, syphilitic or chancroidal, rodent and papillomatous. The traumatic ulcer may be the result and extension of erosion; it may follow an œdematous condition of the vaginal portion—to which condition I called the attention of the profession in a paper presented to the American Gynecological Society in 1889—or it may be the result of violence from various causes. The syphilitic or chancroidal ulcer is not of frequent occurrence, and should depend for diagnosis upon the data by which venereal sores are identified in other locations. The papillomatous ulcer, or *papilloma verrucosum*, was described by Heitzmann in 1887.[1] He had seen four cases, three in multiparæ and one in a nullipara, which subsequently became malignant and required extirpation of the uterus. He describes it as beginning as a small hypertrophic development upon the mucous membrane, usually upon the anterior lip, which may be as large as a lentil or a chestnut. It may become eroded or ulcerated and bleed freely. Its structure is papillomatous with new glandular formation, and at the border of the erosion there may be groups of epithelial cells in nests, as in epithelioma. It may develop into epithelioma, but, perhaps, not until years have elapsed. The rodent or corroding ulcer of the vaginal portion was described by John and Charles Clarke, and is also a rare form of ulceration. John Williams has described three cases,[2] and a paper upon the same subject has more recently been contributed by Browicz.[3] This disease is quite suggestive of lupus, may continue for years, and may terminate in carcinoma. One of Williams's cases was under observation ten years, the second died from paralysis nine years after the discovery of the ulcer, and in the third the cervix and vagina were nearly destroyed by the ulcerative process, and the fatal issue was probably influenced thereby. Browicz found no trace of carcinoma in his investigations, nor did Williams in either of his cases, but the number is too small to be considered as an argument against the development of carcinoma with this condition. The rodent ulcer is seen almost solely among the aged, with whom degenerative changes take place slowly. As this condition upon the exterior of

[1] Allgemeiner Wiener medicinische Zeitung, 1887, xxxii. 596.

[2] Transactions of the London Obstetrical Society, 1885, p. 60.

[3] Centralblatt für Gynäkologie, 1888, p. 94.

the body may degenerate or develop into carcinoma, I see no reason for thinking that the same result may not occur upon the vaginal portion of the cervix uteri. For this condition, therefore, as well as for all other forms of ulceration which refuse to heal after treatment for a sufficient length of time with astringent and stimulating applications, amputation is indicated not only for its diagnostic, but also for its probable curative value.

I have referred to glandular disease of the vaginal portion as leading to uncertainty concerning the presence or absence of malignant disease, because nearly or quite all the subject of erosions and ulceration of the os uteri is referred by Ruge and Veit to the new formation of glandular tissue. Included, also, are the retention cysts and follicles of the vaginal portion as a part of the same process. Ruge and Veit see in this condition not only one which is very suspicious, but one which it is often impossible to differentiate from carcinoma. The carefulness with which their investigations were made and the closeness of their reasoning compel respect, though clinical experience may not always harmonize with their conclusions. I believe, however, that their investigations would amply justify the proposition which I have suggested to perform amputation in all cases in which the diagnosis is doubtful. I have said that stimulating and astringent applications were sometimes indicated before resorting to amputation. There is a degree of uncertainty as to the result in such treatment. It is impossible to foretell the degree of tissue irritation which will be caused by contact with a powerful astringent or caustic. I have seen cases in which the application of powerful solutions of chloride of zinc seemed to stimulate a malignant growth to increased activity.

Spanton recently reported[1] a case in which nitric acid was applied to a supposed syphilitic ulcer of the vaginal portion, the patient being at the same time subjected to constitutional treatment. The ulcer healed, but in six months another appeared upon the same situation, and examination of the excised tissue revealed its malignancy. In the discussion of Spanton's paper, Inglis Parsons stated that many cases were on record (unfortunately none were referred to) in which cancer had formed upon the site of syphilitic lesions. On the same occasion Fenwick reported a case in which there was a supposed syphilitic erosion of the vaginal portion. It

[1] British Gynecological Journal, 1890, vi. 70.

disappeared in two weeks without treatment, but three months later there was a malignant growth of the cervix and vagina.

It may be asked why this operation is proposed rather than the high amputation of the cervix, which was so earnestly advocated by Schröder. The reply, which is a reiteration of what has already been said, is that this operation is proposed chiefly for diagnostic purposes; incidentally it will be curative in a certain proportion of cases. Schröder believed that carcinoma of the vaginal portion usually remained limited to the cervix, and hence, consistently and logically, performed high amputation in such cases, while hysterectomy was reserved for those in which the body or the supra-vaginal cervix was involved.[1] There is probably a field for the supra-vaginal amputation, though I doubt if it is as extensive as is believed by Hoffmeier, Winter, and others of Schröder's followers; but this is not entirely germane to the question under discussion. The same may be said of an indication for amputation of the vaginal portion, which occasionally occurs in the coëxistence of carcinoma with pregnancy. The supra-vaginal operation is manifestly inadmissible, while the other operation can usually be done without great danger to mother or child. Interesting cases of this character have been recorded by Ashton[2] and Godson.[3] Concerning the method of performing the operation I have nothing new to offer. It is a simple operation, and I have usually performed it with curved scissors and tenaculum or volsella. In cases in which the tissue is very dense, a knife is preferable to scissors. The circumstances connected with each individual case will determine whether it is better to cauterize the wounded surface of the uterus, to allow it to granulate, or to cover it with the contiguous mucous membrane of the vagina.

[1] See Winter, Zeitschrift für Geburtshülfe und Gynäkologie, xxxii. 1, p. 196.

[2] Maryland Medical Journal, 1887, xviii. p. 77.

[3] Transactions of the London Obstetrical Society, 1884, xxv. p. 18.

XX. Note on Lacerations of the Cervix Uteri.[1]

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Observation has convinced me that lacerations of the cervix uteri, due to parturition, give rise to severe and troublesome symptoms in the majority of cases.

One of the most important of the effects of these lacerations appears to be the interference with circulation of the blood and lymph in the cervix, resulting from the accident, for one of the most striking effects of the operation of trachelorrhaphy is the rapid diminution in the size and swelling of the cervix.

The enlargement of the Nabothian follicles observed in most cases of cervical laceration is another noteworthy effect, in great part due to the disturbed circulation in the cervical vessels. The tension produced by the distended Nabothian follicle appears to be one great cause of the persistent discomfort present in many cases of cervical laceration, as is shown in the fact that this discomfort is generally, for a time at all events, relieved by puncture of the enlarged follicles. This palliative operation has to be frequently repeated in cases where the radical operation is, for one reason or other, not admissible.

Another effect produced by cervical laceration is more or less constant cellulitis, or endocervicitis, due, no doubt, to partially septic inflammation caused by the abraded or raw surface, and resulting in more or less constant lymphangitis and endocervicitis. These latter effects may be present in a marked degree in cases where the laceration extends to a slight depth as well as in cases where the laceration has been deeper. A very important element in most cases of cervical laceration is the eversion of the os uteri

[1] Dr. Walter B. Chase, of Brooklyn, who read Dr. Hewitt's paper, said that during last summer, while preparing a paper on the "Genesis of Cancer of the Cervix Uteri," he requested Dr. Hewitt's opinion as to cervical laceration as a factor in its development, but as the reply was not received until after the reading of the paper before the Brooklyn Gynecological Society, he took pleasure in presenting it to the Medical Society of the State of New York, for the reasons that any paper, however brief, from one so eminent, would be most acceptable to the Society, and that from the American standpoint it would be seen that Dr. Hewitt had practically accepted the doctrines of Dr. T. Addis Emmet, an honored member of the Society.

which occurs more or less in different instances. The delicate surface of the lower part of the cervical canal is thus exposed to friction during intercourse and during walking or standing, the results being that the surface becomes inflamed and in a so-called "ulcerated" state. The os uteri is often also greatly hypertrophied on one or both sides of the laceration.

Eversion of the os may, however, occur without laceration as a consequence of abnormalities of the cervical circulation, and in cases where there has been no laceration. It may occur even in women who are unmarried and in nulliparæ; the most frequent cause of the eversion in nulliparæ being chronic uterine flexion. Eversion leads to hypertrophy, but the reverse is also true, for hypertrophy may occasion eversion.

Cicatricial infiltration of the tissues at the deepest part of the laceration is a well-known effect of laceration, and the constant pressure on and compression of nerve tissue thus produced, no doubt, give rise to a good deal of the suffering present in such cases.

As regards the influence of cervical laceration in predisposing to cancer of the cervix, it appears to me exceedingly difficult to produce data of a reliable character for solving the question. My experience has shown me that cancer of the cervix is far more likely to occur in women who are married, or who practise sexual intercourse, than in virgins. This would favor the belief that physical injury to the cervix, such as would be liable to occur from intercourse or from actual parturient laceration, might decidedly predispose to cancer of the cervix. I have as yet, however, not seen a case in which parturient laceration could be indubitably assigned as the cause of cervical cancer.

Doubts have been expressed as to the utility of the radical operation for cervical laceration. I am, nevertheless, convinced from the results obtained in several severe cases, that the operation is indicated, inasmuch as it is generally successful in removing chronic discomforts traceable to the associated pathological conditions above described, in relation to the free circulation, in preventing the eversion, inflammatory and other consequences, and in removing the hypertrophy of the lips of the os uteri. Further, as there seems to be reason to fear that cancer of the cervix may result from a chronic, irritated condition of the os uteri, such as is observed in cases of laceration, these constitute an additional argument for the performance of the radical operation of trachelorrhaphy.

DISCUSSION.

Dr. H. E. Hayd, of Buffalo: I feel that this paper, although a short one, suggests a great deal more than it has stated. It suggests to me that we operate altogether on too many cervices. While nothing but an operation will relieve the laceration presenting a cauliflower appearance, yet to sew up all lacerations appears to me unreasonable and not in accord with sound surgery. By the use of galvanism I have relieved many women of a hyperplastic condition of the neck of the uterus and thus done away with the necessity for an operation.

Dr. George M. Edebohls, of New York: The paper has described very well the sequelæ of lacerations of the cervix. It is very properly insisted that many lacerations, even the majority, do not call for any operation; that relief can be secured otherwise. But where there is a large hyperplastic cervix, increase of cervical tissue, eversion of the mucosa, and degeneration, cases in which ordinarily trachelorrhaphy has been performed, I wish to say that a much better method is circular amputation to above the tear. This operation is perhaps, not so difficult as a well-executed trachelorrhaphy, and is much more positive in its results. By it one removes at one sweep a large amount of hypertrophied cervical tissue, and induces subinvolution, while leaving the cervix more symmetrical than does the Emmet operation even when well performed. The latter leaves a cicatrix, disagreeable of itself, and which changes the normal shape of the cervix. By amputation the mucosa is left unexposed, whereas after trachelorrhaphy it sometimes is exposed to friction and becomes irritated.

Dr. Chase: I did not anticipate that this paper would bring out a discussion relative to the propriety of operation for laceration of the cervix. Its place in the plastic surgery of gynecology is too well established to require any defence from me, and I shall not occupy the time of this Society for any such purpose. The assertion of the last speaker that even a well-executed trachelorrhaphy will result in cicatricial tissue and more or less detract from the symmetry of the cervix, seems to me not in accord with general clinical experience. Further, his proposition to amputate rather than repair a lacerated cervix is rather remarkable when considered in connection with his argument enforcing it. Why mutilate when restoration is possible?

If normal proportions and absence of cicatrix is the ideal sought, what shall be said of the stump and its scar?

XXI. The Importance of Drainage in the Treatment of Diseases of the Endometrium.

By W. GILL WYLIE, M.D.,
NEW YORK.

Ten years ago, when I first began to write and teach dilatation or divulsion, curetting, and drainage in the treatment of chronic endometritis, intra-uterine treatment was practically abandoned by Dr. Emmet and other gynecological teachers in New York, because the old methods of making intra-uterine applications were found to be useless, and often dangerous. The typical cases of chronic endometritis associated with imperfect development were usually called cases of anteflexion, and are still treated by many with the view to straightening the flexion. The fact of the trouble being really due to a chronic endometritis is usually even to-day ignored.

In cases of chronic cervicitis every effort was made to suck out the mucous plug and apply iodine, etc., curetting being done only when necessitated by severe hemorrhage, and, as these cases are nearly always associated with some form of uterine displacement, all efforts were directed to correcting the displacement by the use of the pessary and other means, not one word being said about drainage. Even to-day the straight glass stem is still used, the main object being to cure the flexion, and only incidentally to drain the uterus.

In one of my first papers on anteflexion and its associated pathological conditions, published eight or nine years ago, I tried to demonstrate the fact that the true pathological condition was not the anteflexion, but the hyperæsthetic and indurated condition of the endometrium at or above the os internum, and I advocated free divulsion, curetting, and drainage by means of a curved, hard rubber drainage-tube, with a slight bulb at the end to keep it in place, the object being to bring about a radical change in the endometrium, and to keep the os internum dilated and open to secure drainage.

I also advocated this same treatment in all cases of chronic endometritis. For years previous to writing on this subject I had experimented with gauze, lamp-wicks, strands of wire, small wire cages,

and glass, and finally came to the conclusion that the end was best secured by a hard rubber drainage-tube, properly curved so as to make it practicable to insert it after free divulsion entirely through the os internum and into the cavity of the fundus; this tube had a deep groove, about one-third of its calibre, so as to secure drainage, and a slight bulb on its end to keep it from being readily forced out of the uterus by the uterine contractions, and a button-shaped end to fit up against the os. I found that in acute septic endometritis following labor and abortion, as a rule, the os was patulous or readily dilatable, and all that was needed was to empty the uterus and wash it out once an hour with a 1 to 60 carbolic acid solution until the temperature fell to normal and remained so for eight to twelve hours; that the then prevalent method of washing only two or three, or at most four, times in twenty-four hours was a failure, while the frequent and persistent washings would rarely fail to cure septic endometritis. I also discovered that when the uterus measured over three and a half inches, it was due either to subinvolution or a new-growth, and that in such cases rarely was the os internum contracted to such an extent that by divulsing and curetting, and washing or swabbing out it was necessary to put in a drainage-tube or gauze to secure perfect drainage.

For over nine years, at the New York Polyclinic, I have taught divulsion, curetting, and drainage as being the best method of treating endometritis. I claimed that a case of chronic endometritis should be treated by the gynecologist exactly as a well-trained surgeon would treat an old pyogenic cavity which was imperfectly drained by a sinus, by dilating, curetting and draining until it healed from the bottom; but I always cautioned my class to recollect that there was a difference to be taken into consideration, namely, that once in each month the uterus is subjected to an increasing congestion and escape of blood closely simulating the congestion of what we call acute inflammation, and also that the uterus is lined, especially the cervix, with deep-seated glands and follicles which are liable to have their mouths or outlets closed by a scar resulting from burning with nitric acid or any caustic, even by the much-adored electric cautery, and, therefore, whatever is done to remove the diseased membrane and secure drainage, all methods that result in scarring the tissues should be avoided.

Now I have faithfully, and I can say successfully, practised divulsion, curetting, and drainage for nearly ten years in the wards

of the Bellevue Hospital, rarely meeting a case that was not cured by one or, at most, two attempts to divulse, curette, and drain for a week or ten days. As a rule, I remove the tube on the eighth day, and after the next menstruation I examine the endometrium, and if it bleeds from the gentlest touch with the sound, or if this procedure causes pain, then I dilate with steel dilators and apply carbolic acid through a silver tube directly to the endometrium and repeat it in one week. In some cases it will be necessary to divulse under ether, and then curette and drain.

I have found that cases of chronic endometritis associated with what appear to be small fibroid masses in the tissues of the wall of the uterus are always very difficult to cure, and some can only be cured by removing the tubes and ovaries and thus stop menstruation, which seems to be the starting-point in these cases. There is another class of cases which are also very difficult to cure: cases in which the uterus is large, usually three inches deep, and the endometrium is exquisitely sensitive to the touch, and for some days before menstruation and a longer time after the menses have stopped there is marked abdominal tenderness and pain about the pelvis, with an irritating discharge which soon sets up a chronic vaginitis. In these cases the disease seems to be deep seated, probably in the glands and follicles, and we succeed in merely removing the superficial part, and menstruation seems to again develop the endometritis, etc. Sometimes I have thought that such recurrent, obstinate attacks might be due to a gouty diathesis; but, if it is so, all treatment to prevent its influence locally has proved of no avail —but there are very rare cases where repeated and frequent washing out of the uterus, with antisepsis, gives the best result.

Notwithstanding the fact that all of my papers written in the past ten years have clearly advocated drainage in chronic endometritis, and that I have also successfully practised it in my service at Bellevue and in my private hospital, and taught it once or twice a week at the New York Polyclinic, yet uterine drainage has only recently been actively advocated by some of my New York colleagues, and they are now only beginning to go over the ground which I travelled twelve years ago. Unfortunately, successful men are the last to leave off old methods and adopt new ones, and it is not the custom for older men to attend the clinics of younger men, especially if they live in the same town. I am perfectly sure that these of my colleagues will, sooner or later, come to practi-

cally the same conclusions that I reached and have practised for over ten years:

1. In acute septic endometritis dilate, empty the uterus, and wash out with a not dangerous antiseptic *every hour* until the poison is killed and washed away.

2. In cases of subinvolution or new-growth, divulse or dilate and remove the new-growth, or reduce the subinvolution by means of simple stimulating boro-glyceride applications. After curetting and washing out or swabbing out the uterus, gauze or other means of drainage is useless and increases the chances of causing septic infection. Besides, gauze only drains a uterus well for a few hours; after that time it may become filled with thick mucus, and in a measure obstruct drainage.

3. That in characteristic cases of chronic endometritis accompanied by dysmenorrhœa and local pain, usually called and treated as cases of flexion or displacement, the os internum is so rigid and contractile that unless divulsion or dilatation is carried to a very dangerous extent, it will be practically impossible in many cases to pass a straight glass stem only two inches long, or to get iodoform gauze up into the cavity of the fundus and keep it there longer than an hour or two. If they exclude this very large class of cases of chronic endometritis, and say they do not use gauze in these, they will find then that they make use of gauze to assist drainage when it is not needed. When once they learn to use a steel dilator to dilate not only the cavity of the cervix but also the cavity of the fundus, and will then thoroughly curette with a steel curette and swab out with pure carbolic acid through a silver tube which prevents the rubbing off of the fluid before it reaches the fundus, and then insert a properly curved, hard-rubber drainage-tube through the os internum and keep it there with the patient in bed for eight days, they will find that they can cure more than nine out of ten cases of dysmenorrhœa or chronic endometritis that come to them, and they will also admit the advantage of the hard-rubber drainage over iodoform gauze in such cases, for it is cleaner, does not retain discharges, nor make the best possible nidus for septic germs, and besides it keeps forcibly dilated the contractile and irritable os internus, which is the main obstacle to drainage of the uterine cavity.

DISCUSSION.

Dr. William M. Polk, of New York: As to the value of the procedures recommended in the treatment of endometritis, I suppose all have come to admit that drainage is a desirable result in uterine troubles, especially as retention of decomposing substances is, owing to the close proximity of the peritoneum, fraught with great danger. The question presenting itself is, How can the uterus best be drained? Each individual is likely to think that his particular procedure is better than that suggested by somebody else, and I suppose that I am not altogether free from that fault. At any rate I find myself quite at variance with my predecessor regarding the introduction, retention, and influence of gauze within the uterus. Gauze has proven itself the best material for draining cavities, whether it be the peritoneum, the bottom of some abscess, or the uterus. I have invited the author of the paper to a demonstration of its practicability in my wards in Bellevue Hospital, but he has not availed himself of the invitation. The method of preparing the uterus for treatment, including that for the introduction of gauze, have been well described by Dr. Wylie, but he claims to have been teaching the profession for ten years how the interior of the uterus can be reached. In a paper by Dr. Pallen, published in the *Proceedings of the New York Obstetrical Society* some years ago, it will be learned that somebody else than either Dr. Wylie or myself discovered the art of introducing stems, etc., into the uterus, including even gauze.

Regarding the extent to which the uterine canal can be dilated, it can be carried up to a third of an inch, and this amount of dilatation permits of the introduction of gauze. Four thicknesses of gauze, the width of my index finger and two feet long, can be put into the average uterus affected with chronic subinvolution; that is, a uterus measuring three to three and a half inches in depth. It is also true that the uterus which has never been impregnated can be packed with gauze; the uterus which is the seat of endometritis consequent upon stenosis, and not upon subinvolution following miscarriage or labor. Indeed, I treat cases of acute gonorrhœa by drainage, introducing gauze. But thorough dilatation must first be made. I hope that by the application of the principles of drainage in endometritis, the medical profession will be enabled to save women from reaching that condition which has so often necessitated the removal of the ovaries and tubes.

Dr. Mordecai Price, of Philadelphia: I am surprised that Dr. Wylie and Dr. Polk should advocate forcible dilatation of the uterus.

The question had been asked repeatedly, Why so many abdominal sections upon women? I would reply that gonorrhœa and the dilator are to-day the two most fruitful causes of the removal of the tubes and ovaries. I have a number of times removed tubes containing pus in cases in which there was no other cause than that the dilator had been used, and used by men who stood among the highest in the profession in America, who said to the patients at the time that there was no disease of the appendages, and that there was no reason why they should not become pregnant. The disease evidently developed after dilatation had been performed, and the dilator was in those instances to blame. For my own part, I do not own a dilator, and never will.

Dr. Joseph Price, of Philadelphia: I must say that the statements made by the two distinguished teachers who first spoke surprised me greatly. They acknowledged, and even called attention to, the frequency of pelvic troubles in women and the mutilating procedures required to cure them. Indeed, it is well known to all, that abdominal section has frequently to be made in a class of cases which scarcely were known a few years ago. Why? Did they exist then? No. Had they existed they would have been recognized, for men were just as capable then of making a diagnosis as at present.

Tubal and ovarian diseases are exceedingly common at present, and they are to be accounted for to a great extent by too frequent tampering with the uterus. There is scarcely any mucous membrane in the body to which we would apply so many irritants as are being applied to the cavity of the uterus. The nose or eye would not tolerate such heroic treatment. Why should we apply it to the uterus? Endometritis—acute or chronic—as described in the books, except that of a specific nature, I have failed to recognize, and never treat. In the case of gonorrhœal endometritis I agree fully with Dr. Polk as to the necessity for prompt and radical treatment.

Dr. Paul F. Mundé, of New York: I used to see, and continue to see, cases of chronic endometritis, and for many years, with others, have applied practically the same procedures for its treatment as those for which Dr. Wylie claims priority. I am aware that it is not fashionable at present to be an advocate of intra-uterine medication. Even our great masters, Emmet and Thomas, who have described it in their books and practised it, have turned their backs on it. But I am unable to understand why the mucous membrane of the uterus should not be treated, when diseased, on the same principles that other cavities receive treatment. Dr. Emmet has said that it is not a mucous membrane; yet it has glands, it has epithelium, and it secretes a form of mucus, and I think we are justified in calling it a mucous

membrane, and in treating it as we would other mucous membranes. Dr. Price's condemnation of tinkering with the uterus is proper. Evil consequences follow the constant introduction of applicators, of sounds, of pulling at the uterus, etc.; meddlesome gynecology is as bad as meddlesome midwifery, if not worse. No doubt all can recall cases of salpingitis caused by unnecessary uterine treatment. But for all that, when medication is necessary it is just as necessary in disease of the uterus as in other troubles. Formerly I treated chronic endometritis by mild topical applications, which was faulty, as the applications were made frequently and the women returned at once to their homes, being in danger of getting up an inflammation by moving about. Now I treat the disease as if I were going to do an operation, and in a manner in harmony with the methods of Dr. Wylie and Dr. Polk. But I do not think it always necessary to drain, provided there has been thorough dilatation. After thoroughly dilating and curetting, to insert either gauze, rubber tube, glass tube, or any other drain, is not needed, for unless either anteflexed or retroflexed the uterus is wide enough open for drainage.

Dr. H. J. Boldt, of New York: The existence of endometritis can be proven by post-mortem findings: there is no question in my mind as to its occurrence, nor as to its rebelliousness to treatment. Dilatation and drainage have sometimes given rise to tubal disease, because their application has not been made with due precautions. If the same precautions are taken as in performing laparotomy, I am convinced that disease of the adnexa will not follow. I have long employed drainage in some form, but now resort nearly always to gauze, which I regard as far superior to the stem drain.

Dr. Joseph Hoffman, of Philadelphia: I believe that nearly every case of inflammation of the uterus with a discharge, is either one simply of cervicitis or else follows displacement of the womb. Therefore, whatever treatment may be adopted, the idea should be kept in view of getting the organ back to its proper position. There is perhaps not one caustic that has not been used within the uterus; no other organ in the body would stand such an amount of abuse. I wish to emphasize the fact that not every discharge from the uterus or cervix is of serious consequence; one does not go to a rhinologist to have caustics and electricity applied whenever he has a nasal discharge. About the only place in which dilatation of the cervix is justifiable is in abortion. To introduce the dilator up to the fundus and dilate is a most dangerous procedure. About a year ago I was called upon to operate in a case in which a practitioner had ruptured the uterus by it.

Dr. Wylie: It is hardly necessary for me to say that I lay no claim

to infallibility, nor do I make claim to priority in method, except that I think I was the first to make practical treatment of chronic endometritis, whether associated with dysmenorrhœa and anteflexion, or with posterior displacement and a large, sensitive uterus. When I wrote my first paper much had been said about dilating, curetting, and cutting the os in anteflexion and stenosis, but very little had been said, or written, or done in New York in the way of treating chronic endometritis by curettement and drainage. The supposition that gauze is the best drain for insertion into an organ which had a tendency to contract spasmodically at its entrance, I believe will prove erroneous. The cases to which I have referred as being especially suitable to treatment by introduction of the tube are those of imperfectly developed uterus with dysmenorrhœa, with induration and sensitiveness, in which it is desired to bring about a physiological change. In such cases it is impracticable to introduce gauze; or to keep it in if it were introduced; or, if it remains in, after twenty-four hours it will form a favorable nidus for the development of germs.

Regarding the use of caustics within the uterus, I have not employed them for about twenty years. They are sure to do harm by causing scar tissue. Regarding dilatation and curetting, I advise the general practitioner not to undertake these procedures unless he is a good surgeon as well as a good doctor. If anyone doubts that there is such a condition as endometritis, let him come to New York and he will be shown plenty of cases.

XXII. Abdominal Drainage.

By MORDECAI PRICE, M.D.,
PHILADELPHIA, PA.

To drainage more than any one thing may be given the credit of the marvellous improvement in the statistics of abdominal surgery. There are few questions claiming our attention and consideration at the present time of such great moment. There is not an operator in the country that does not ask himself this question at every difficult operation: In what way can I best protect my patient from the dangers of hemorrhage, peritonitis, and chemical changes that must take place if there is any dirt or débris left after operation? how can I best remove this greatest of all dangers?—only by the glass tubes, such as I have shown you. There is no

substitute, nothing else, that will remove the dangerous elements of disease without adding one single feather's weight to the already dangerous condition of the patient. It is with drainage as it is with every other surgical procedure—men attempt to lay down some dictum or arbitrary rule without first having that experience or training which will enable them to determine definitely from the results of experience the value of any proposed change or innovation of long-accepted methods. While I would not make a claim to conservatism in our surgical methods, we would hold to the practice of that which has been approved in the hands of the men who have to their credit the greatest number of abdominal sections for the most aggravated and complicated conditions, with a mortality far below those who either decry drainage, or who have not yet settled definitely in their own minds just when to drain. One of the peculiar features of the medical writers of the day is to propose something new, or some modification of an established procedure, without themselves first having had that experience in surgical work which would entitle their ventures to confidence: they are without that best support, the strong logic of results. To all of us it has been a matter of amusement, not unmixed with mortification, to note the wide circulation of elaborate papers from the pens of men whom we know from personal knowledge have had but little or no experience of the conditions of which they write, or practice of the procedure in which they would vauntingly figure as pioneers; they are men whose opinions are not sought for in consultation.

The statement has been made that the drainage-tube will, soon after being placed in position, be completely encapsuled by inflammatory products, so that its usefulness will be destroyed, and the parts to be drained will be shut off from the tube. If this be so, how do you explain the fact that in extra-uterine pregnancy we have free drainage for days of pure blood from the placental attachment—the point of the tube will occupy but little of the space covered by the placenta, yet the drainage goes on to a perfect cure.

Let me say just here that as long as the tube has been properly placed and the drainage free, there will always be room for the fluid to descend to the lowest point to be removed through the tube; nothing could close the way while there was any drainage to keep the way open, and where there is not enough the tube should be removed.

The method of drainage known as Mikulicz's is one that has but a single feature to warrant its use, and no one but a bungler should be forced to such straits as to be compelled to use it to stop hemorrhage. I have seen gauze packing in one case of extra-uterine pregnancy, and I now know that the glass tube would have done the work better, and the patient would have been out of bed two weeks earlier. Drainage is not intended to take the place of proper preparation of the patient for operation, nor will a proper preparation of the case save her without drainage; both are required if you wish to reduce your mortality in all your work, both in difficult and easy cases, to a mortality of two or three in a hundred. This has been accomplished by a number of operators, and all of them, without an exception, have been men who practise drainage and use the glass drainage-tube to the exclusion of all other methods. If they use any other, it is exceptional. I do not remember to have seen more than half a dozen cases in all my work and that of my brother, some 1500 operations in all.

Drainage by the small glass drainage-tube has been recognized and used by such men as Keith, Bantock, Lawson Tait, Joseph Price, and many others—by several of them in more than a thousand cases—and from not one of them do we hear a word of objection or condemnation, but with one accord they claim for it absolute safety and efficiency, and it is not too much to assert here that these men know how to use drainage. No surgeon in his right mind to-day doubts the propriety of drainage in extra-uterine pregnancy, or when collections of pus have been dealt with in the peritoneum. In fact, where there is dirt and leakage of blood and débris, drainage is indicated. In no other way are these materials so perfectly under the control of the surgeon as when glass drainage is used.

The surgeon should have a collection of tubes, such as I show you here, of different lengths, so as to be able in any case to get to the bottom of the pelvis or the cavity to be drained. In placing the tube in position, the following precautions must be observed if you wish to avoid trouble and have the tube do its work in a perfect manner. The surgeon must pass two fingers, with the palmar face to the pubes, down to the very bottom of the cavity to be drained, and keep them there until the tube is placed; be sure no bowel is left under the tube. Now let the assistant take charge of the tube, and see that no change is made in its position while the surgeon is making the remainder of the toilet of the patient. In

the event of the displacement of the tube, all the care as before must be taken to have the displacement corrected.

The same care and cleanliness should be practised in the toilet of the tube as in other details of the operation. A long-nozzle syringe should be used for the purpose, and an addition of a short piece of rubber tubing should be used where the nozzle of the syringe does not extend to the bottom of the glass tube. The tube should be cleaned before closing the wound, so as to be sure there is no hemorrhage, and again as soon as the sutures are placed and tied. So as to protect the dressings from soiling, a rubber dam should be placed over the tube. This may be done by a mere nick in the middle of the rubber, and slight stretching will enable the operator to place it over the end of the tube. A handful of absorbent cotton should be placed around and over the tube, and the four corners of the rubber pinned over all, a pin fastening the rubber to the bandage. The rubber should be from twelve to fourteen inches square, and over the entire dressing a wide and soft towel is placed and pinned to the bandage to prevent the patient molesting any part of the dressing. When the drainage or hemorrhage, or both, are profuse, the cotton should be changed and the tube cleaned every twenty minutes, and at least once an hour for the first six hours, and as the discharge lessens the time may be longer. The nurse should never leave the patient while the drainage-tube is left in the patient. This is a precaution not to be neglected. If the glass tube remains in for thirty-six hours or longer, it must be followed by a small rubber tube, and the rubber removed half an inch at a time at every dressing until the tube is out. I never knew mischief to result where the tube was cautiously managed and removed as directed, and I have seen it used in more than one thousand bad cases. As soon as we decide to remove the drainage-tube, we should prepare the bowels by purgation to continue the drain, so that the peritoneum will be able to take care of all the drainage thereafter.

The tube should be long enough to come out of the wound at least half an inch, so as to make room for the dressings. After the tube is placed, the apron of omentum, if it can be found, should be pushed down in front of the tube so as to protect the bowels.

A tube placed in this way cannot complicate any case of abdominal surgery, nor will it produce or in any way help to produce a

fecal fistula, but will render great help to the surgeon when he has either done bad work in his enucleation of diseased conditions, or when the conditions present were so connected with the bowel that its injury was unavoidable. It is in these cases where the drainage-tube renders the greatest service to patient and surgeon, for without it we would lose many valuable lives. Where the bowel is so necrosed and there is danger of a fecal fistula, the tube will prevent the infiltration of the contents through the abdomen. Fistulas formed in these cases all get well without an exception, so far as my experience has been.

Drainage of the solid abdominal organs, liver, spleen, and kidney, can be best accomplished by gauze packing and the rubber drainage-tube when the lacerated, torn, and cut tissues of these organs are to be drained; it is essential that the drainage should be free from the organ to the external surface, and to accomplish this the capsule of the diseased organ must be stitched to the internal borders of the wound.

The gauze drain can be so used as to prevent bleeding from cut surfaces and the extravasation of poisonous materials within the peritoneal cavity. The gauze should come out of the external wound so as to fasten or anchor the liver while union is taking place, so as to prevent the movements of the liver during respiration. In bullet wounds the drainage should be conducted in this manner to prevent bleeding and to insure free drainage. It is sometimes necessary to enlarge the wound so as to stop bleeding. The gauze drain should be used in abscess of the spleen and kidney.

DISCUSSION.

Dr. A. P. Dudley, of New York: The glass drainage-tube is all right in its place, but I think it is used in a great many cases where there is no need of it. As hospital interne and in private practice I have watched over probably as many as seven hundred cases of abdominal section, in many of which drainage was resorted to; and while I have seen good results from drainage, I have also seen some bad results from it. I have seen cases in which death took place and the drainage-tube was proven to have been at fault by post-mortem examination. In spite of what has been said by the author, I have also seen at autopsy that lymph has formed around the tube. I have seen

the abdominal cavity full of septic fluid while the drainage-tube was still in place, the perforations being blocked by lymph. I contend that it is impossible to drain the abdominal cavity properly, where there is general peritonitis, by the use of the glass drainage-tube. Water will not flow up hill. The use of iodoform gauze is reasonable and constitutes good practice. In my own laparotomies, numbering nearly two hundred, I have used the glass drainage-tube in only two, and both patients died. On the other hand, in as many as seventy-five consecutive laparotomies without the use of the drainage-tube, not one patient died. I use iodoform gauze, but do not allow it to come up through the abdominal incision. I carry the end out through an incision into the vaginal vault behind the uterus; this insures drainage from the lowest point, and also prevents hemorrhage; it does not retard the recovery of the patient, but hastens it in a good many cases; it does not produce intestinal adhesions. The gauze is not left in long enough to become septic; the parts readily heal after its removal. I have lost only two patients from peritonitis following laparotomy, and attribute the fault in those cases to failure to use gauze.

Dr. Joseph Hoffman, of Philadelphia: Dr. Dudley's drainage of the abdominal cavity by gauze, is to be compared to digging one well alongside another in order to drain this of its water. The glass tube and syringe answer the purpose much better. An objectionable feature of gauze is, that it attracts moisture—yet on this very feature eppended its capacity to drain; again, it will not take away small pieces of lymph and other débris. Dr. Dudley's limited experience, losing the only two patients on whom he had tried the glass drainage-tube, constitutes a weak objection to the method itself in view of the fact that, together with the Drs. Price, I have used the tube in over a thousand cases and have lost very few indeed. I do not say that gauze will not drain, but I assert that the tube keeps the parts dryer. It is a great mistake to suppose that gauze will not cause adhesions. I have used it in some cases on account of that very tendency, and it was very effectual in shutting off the parts by the adhesions of lymph and granulation tissue which it caused to be thrown out.

Dr. Joseph Price, of Philadelphia: Probably all know that I am much interested in the subject of drainage, for I have discussed it on many occasions; as long, however, as it is a life-saving service I will continue to reiterate my views. I can easily prove by my correspondence, that drainage is really one of the chief of life-saving methods in surgery. Some of the objectors to the glass drainage-tube offer arguments which their own experience, as compared with that of those who drained more frequently, refute. Sir Spencer Wells, for instance, acknowledged that two of his successors at the

Samaritan Hospital resorted to flushing and drainage oftener than he did, and it was found that the percentage of deaths from ovariotomy in his hands had been over fourteen, while in the hands of his successors it had been less than five.

I would urge my hearers not to become prejudiced against drainage by the results which may have followed its use in two or half a dozen cases. When a man condemns drainage, I feel that he has been operating in a number of cases in which he should not; for instance, removing comparatively healthy appendages in cases of globus hystericus, or sensitive back, etc. But take the class of cases which I see so commonly—those in which there are various forms and severe grades of suppurative disease—my conviction is that in them there are no other means of saving life except those of removal, cleanliness, washing, and drainage. Take drainage from me and one would stay my hands in pelvic and abdominal work. While we speak so freely about drainage, we do not mean to say that it is our custom to drain in all cases, in all forms of healthy tumors, so to speak; in cases in which adhesions have not to be broken up, in which no pus escapes, and the operation is an ideal one, drainage is not necessary. In a healthy peritoneal cavity an ideal operation will prove successful without drainage. I have demonstrated this in five consecutive Porros, where the healthy uterus was removed from a healthy peritoneal cavity. We drain in all cases in which there is leakage of pus, or muddy lymph, in cases of ruptured ovarian cysts with localized peritonitis, of suppurative dermoids, and where there is fluid in the peritoneal cavity antedating the operation.

Dr. H. J. Boldt, of New York: I used to drain in a number of cases in which now I leave it off, as in extra-uterine pregnancy, etc.-and my patients have recovered under both methods. But when pus enters the abdominal cavity I would use the glass drainage-tube. Where there is a large bleeding surface from torn adhesions nothing will equal gauze drainage. I am of the impression that Dr. Price employs drainage in many cases that would recover without it.

XXIII. Treatment of Endometritis.

By RALPH WALDO, M.D.,
NEW YORK.

I do not propose to enter into a controversy regarding the existence of endometritis in either an acute or chronic form. From the earliest history of medical science to the present time we find men-

tion of inflammatory diseases affecting the genital organs of women, and during the more enlightened period of the world's history we find descriptions of treatment applied directly to the uterus itself—not entirely for the removal of growths, but for the relief of slighter affections.

Aëtius[1] lived in Alexandria about A.D. 500, and spent a large part of his life collecting the medical writings of others that were stored in the famous library of that city. He speaks of the use of the speculum, minutely describes the sponge tent and intra-uterine medication, mentioning the use of ointments, intra-uterine pencils, and caustics of many kinds, which shows that for a long time the Egyptian physicians had been in the habit of treating inflammations of the uterus. During the dark ages this learning seems to have been lost, and its revival was slow. At first this class of troubles were treated by the most heroic measures. Patients were bled from the arm, large numbers of leeches were applied to the cervix, and the unfortunate women were freely rubbed with ointments of antimony, so that in a few days they were unable to sit up without fainting, and, according to the reports of cases that are left, the patients were cured. This mode of treatment was followed by the use of vaginal douches of different kinds. Then came a long list of careful observers, as Bennett, Wright, Tilt, Sims, Byford, Chapman, and many others, until the present treatment has been established.

J. Marion Sims,[2] in 1866, stated that "nothing in uterine disease is more difficult to remedy than endometritis." "The first principle to guide us is that of insuring a free exit from the cavity of the uterus for the secretions therein generated." "The second is that of appropriate applications to the cavity for the purpose of modifying or healing, as it were, its diseased surface." Sims advocated dilatation of the cervical canal with tents or graduated bougies, but in a large majority of cases preferred division of the cervix; furthermore, he mentions the use of a hollow stem that is held in the uterus by separation of the upper extremity. Later he devised a steel branch dilator that has been very little improved upon to the present time.

While these principles have been taught for some time, the custom has been, and still prevails to quite an extent, to treat these

[1] Henry G. Wright: Uterine Diseases, 1867.

[2] Sims: Uterine Surgery, 1871.

troubles by placing the patient in bed, clearing the bowels, applying heat over the abdomen, and giving anodynes to relieve the pain. This is especially the case when endometritis follows labors.

In order to completely describe the treatment of endometritis, we will divide it as follows:

1. Affecting the cervix: (*a*) acute, (*b*) chronic.

2. Affecting the entire endometrium, including that of the cervix and body: (*a*) acute, (*b*) chronic.

In all varieties of endometritis the general regimen must be thoroughly looked after, and in many instances that will be all the treatment required, especially where there is a marked diathesis, as in scrofula, gout, syphilis, etc.

When the cervix alone is affected free drainage should be established, if it does not already exist. Where there is marked contraction of the external os, crucial incision, as recommended by Dr. P. F. Mundé,[1] will be found very beneficial. If the case is mild, applications of tincture of iodine or carbolic acid—or a mixture of the two—tampons thoroughly soaked in glycerin, and hot vaginal douches, are all that is necessary to effect a cure; but, on the other hand, if the glands are extensively involved, it will be found necessary to destroy them, either with a sharp curette or an escharotic. Fuming nitric acid has been quite a favorite remedy of late, although there is scarcely a powerful escharotic that has not been used and does not have its advocates. Dr. T. A. Emmet[2] and a number of others have demonstrated that cicatricial contraction of the cervical canal is apt to follow the use of escharotics.

When the whole endometrium is involved the disease will be found much more difficult to cure. In the acute form, especially if it is of septic origin, the whole uterus is involved; and not infrequently, though it follows parturition, there is so much tumefaction at the internal os that quite a large amount of material is retained in the uterine cavity. Frequently when there is a sudden rise of temperature or arrest of the lochia, if the finger or an instrument is passed through the internal os, a discharge of retained lochia will follow, showing that there is obstruction. In this class of cases Dr. W. M. Polk[3] advocates drainage with strips of iodoform-gauze.

[1] Mundé: Minor Surgical Gynecology.

[2] Emmet: Principles and Practice of Gynecology.

[3] "The Treatment of Acute Endometritis by Drainage." The American Journal of Obstetrics, 1889.

When I was house-surgeon (1882) at the New York Maternity Hospital, it was customary to treat this class of cases with antiseptic (2 per cent. solution of carbolic acid) intra-uterine douches administered from one to three times during the twenty-four hours. I still consider this the best local treatment. B. S. Schultze[1] advocates this method of treatment in chronic suppurative endometritis. He precedes each antiseptic douche with a douche of a 3 per cent. solution of soda, for the purpose of clearing out the accumulated discharges.

In the chronic form of endometritis there is very little tendency to recover, and the ingenuity of the medical profession has been taxed to its utmost to cure the more obstinate varieties. A very large number of astringents and escharotics have been applied in the form of solutions, ointments, bougies, and solid substances. One physician claims to have been the first to use chromic acid, another fuming nitric acid, and so on, but the treatment is very much the same. As I mentioned in the introduction to this paper, J. Marion Sims stated in 1866 that drainage was of the greatest importance in the treatment of this class of cases, and described a stem that he had found very useful in many instances. About two months ago I went to Messrs. Tiemann & Co. to borrow some pessaries to show the class at the Post-Graduate Medical School. They lent me eighty varieties, and said that they would lend me eighty varieties more if I wished. They had a large number of old stems of different kinds and shapes and made of many different materials. Some were perforated, some grooved, some flat, and some round. In the collection there were many that would keep up free drainage, and a number would stay for several days at least in the average cervical canal without support.

I have tried to demonstrate that the idea of establishing drainage in this disease is not new; but, on the other hand, its general adoption is new, although in reality it can hardly be said to be generally adopted. Drainage is not the only thing. If fungosities are present they should be removed with a curette; and the disease is cured much quicker when a good antiseptic is applied to the interior of the uterus after the curetting. With this object in view, Dr. W. M. Polk stated in a paper read at the annual meeting of the American Gynecological Society, September 19, 1888, that

[1] Wiener med. Blatter.

"you should anæsthetize the patient; dilate the cervix and cavity of the uterus; wash out the uterus, using a double catheter; pack, but not tightly, with strips of iodoform gauze." "Curetting is sometimes necessary and valuable, but drainage and the gauze are usually sufficient." Recently, in a paper read before the New York Academy of Medicine, he advised packing with iodoform gauze and leaving it in the uterus for a week, if it is not thrown out before.

It is difficult to find out who first packed the uterus with iodoform gauze for endometritis. Dr. H. J. Garrigues[1] thinks that it was Dr. H. Fritsch, of Breslau. For a long time it has been the practice of quite a number to treat other conditions this way.

The following history will illustrate the treatment that I first saw Dr. C. C. Lee use, and that has been successful in a number of cases in my own experience:

Mrs. D., aged thirty-two years; married twelve years; menstruated profusely for from ten to fourteen days; severe pain before, during, and after the flow. Eight years ago had an abortion followed by fever; since then she has never been well, complaining of pain in the pelvis much of the time, which at times was severe, also of painful and frequent micturition. On examination there was found prolapse of the left ovary and tube, a slightly fixed uterus, and chronic endometritis. November 1, 1881, she was anæsthetized, the vagina was thoroughly washed and douched with a solution of bichloride of mercury, the cervix dilated with a steel branch dilator, the interior of the womb curetted with Thomas's dull curette and douched with a 2 per cent. solution of carbolic acid; a Cleveland glass stem was introduced and held in position with a silver wire passed through the anterior and posterior lips of the cervix. The patient was kept in bed until November 9, 1891, when the stem was removed and a solid glass stem introduced and held in place by means of a Thomas cup pessary. She was allowed to get up. At the end of two weeks the pessary was removed, and it was found that the endometritis had been cured. I have seen this patient a number of times since, and there is no return of the endometritis, which was probably of septic origin following an abortion.

I have successfully treated similar conditions by using strips of iodoform gauze in the place of the tube; but I have never packed the uterus with iodoform gauze, as described by Dr. Polk, but expect to do so when a proper case presents itself.

I think that the cardinal principle is drainage, but do not think that it matters very much how it is accomplished, so long as it is

[1] The American Journal of Obstetrics, January, 1892.

done antiseptically and the uterus is not subjected to too great violence.

I will summarize as follows:

1. In all varieties of endometritis the general health should be most carefully looked after, and any other disease that the patient has should be thoroughly treated. If there is a strumous diathesis, a syphilitic taint, or a chronic gout, constitutional treatment will be found of the utmost value. Persistent anæmias due to malarial poisoning, digestive derangements, overwork, improper food or clothing, poor ventilation, improper exercise, and numerous other causes, will defeat the best possible local treatment.

2. When the cervical endometrium is alone affected, free drainage is usually found to exist; if it does not, it should immediately be established. Where the external os is very small, with a dilatation of the cervical canal existing above, crucial incision should be made; but if the constriction is not so marked, the cervical canal should be dilated only. Dilatation should be accomplished with graduated dilators, or preferably with a steel branch dilator, but *never* with tents. Tents cause too much septicæmia.

3. If the condition has not lasted for a long time, and the cervical glands are not extensively involved, applications of alteratives, as Churchill's tincture of iodine, pure or mixed with an equal part of carbolic acid; or astringents, as solutions of nitrate of silver, with the aid of glycerin applied to the cervix by means of cotton—or, still better, lamb's-wool—tampons, and hot vaginal douches, as advised by Dr. T. A. Emmet, will be found sufficient to effect a cure. If the disease is very acute, applications to the cervical endometrium should be omitted and the patient should be kept in bed. On the other hand, where the condition is very chronic, and the glands are extensively involved, and there is a profuse, thick, tenacious discharge that is very persistent, the patient should be given an anæsthetic, the glands removed with a sharp curette, and a stem left in the cervix to prevent contraction. I prefer the hollow glass stem devised by Dr. Clement Cleveland.

4. When the entire endometrium is involved, as a rule free drainage does not exist, and its establishment is the first thing to be accomplished. In acute septic endometritis, antiseptic intra-uterine douches, as a solution of carbolic acid (2 per cent.) or bichloride of mercury (1 : 5000), should be given often enough to keep the uterus free from septic material. In chronic forms where fungosities do

not exist, the best results are obtained by thoroughly dilating the cervix, with the patient anæsthetized, and the introduction of a Cleveland stem or iodoform gauze.

5. In all excepting the very acute cases, when the cervical canal is left free, from two to three times a week, a tampon thoroughly wet with glycerin is loosely placed in the vagina behind the cervix and allowed to remain for twenty-four hours. When there is no tampon in the vagina, hot vaginal douches are given from one to three times a day, depending upon the severity of the inflammation.

I am aware that it is impossible to thoroughly cover this interesting and very important subject in a single paper, but I have attempted to describe, in the main, the treatment of endometritis that in my hands has proved most successful.

DISCUSSION.

Dr. Andrew F. Currier, of New York: It was a long time before physicians came to appreciate the fact that the uterus, when the seat of disease, should be treated on the same surgical principles as other portions of the body, *i. e.*, by drainage and cleanliness in the fullest sense of the term. While there are some forms of endometritis which yield only to most skilful treatment, yet I think that if one will keep the idea of drainage in mind he will be able to cure a great many cases which heretofore may have resisted his best efforts. A few months ago I expressed the opinion that there was no instrument which we could so ill-afford to do without as the uterine currette, but I would modify that statement to-day since I have learned to regard the tampon as of even greater importance. But the two should go hand in hand in a large number of cases. I agree entirely with the author in his objections to the use of escharotics.

Dr. Walter B. Chase, of Brooklyn: I have serious doubts as to the propriety of using escharotics in conditions classified under the term endometritis. Where disease exists, it is much safer to employ the currette. As to the danger which may attend rapid dilatation, I think it is due not to traumatism, but to septicæmia; that with strict antiseptic precautions one can perform rapid dilatation with almost entire immunity. Dilatation having been accomplished by a safe method, the foundation for the proper treatment of these cases will have been laid.

Dr. H. E. Hayd, of Buffalo: There are various methods for

treating endometritis, each one of which has advocates, and is capable of doing good. By avoiding the use of escharotics, and applying a method to which nature is partial, *i. e.*, drainage, we will get along well in the treatment of this disease. In addition I find tincture of iodine or carbolic acid, or a combination of the two, useful applications. But if there is also any disease in the tubes, the more one tampers with the interior of the uterus the more irritation will be likely to result in the tube. It is best here to resort to a radical procedure, like that suggested by Dr. Polk, namely, to forcibly dilate, then scrape the uterine mucous membrane and pack the cavity thoroughly with iodoform gauze. The more advanced the disease, the more radical must be the treatment.

Dr. George Seymour, of Utica: Judging from a great deal that has been written and said about endometritis, one might regard the uterus as without any physiological connection with the rest of the body. I do not wish to decry any of the valuable methods for treating given cases of endometritis mentioned to-day; nevertheless, I must express the belief that many cases of ovaritis, salpingitis, and disease of the adjacent tissues are due to the mismanagement of endometritis in its earlier stages. I have personally been able to better the condition of my patients, not alone by applying treatment to the uterus, but by giving strict attention to their constitutional state. So far as one can get the patient's circulatory, digestive, and assimilative functions in good condition, just so far will he succeed with his cases of endometritis. We have therapeutics adapted to different organs, or different diseased conditions of the several organs of the body, but it seems to me there is no department of therapeutics which has been so much neglected as hygiene in connection with disease of the uterus. Endometritis is likely to be a local complaint in women who have derangement of the entire intestinal tract if not other functional disturbances.

Dr. R. B. Talbot, of New York: Regarding dilatation of the cervix, the method which I have practised a great deal in corporeal endometritis, especially at the Woman's Hospital, is that of dilating by degrees. In private practice and in my office I have for nine years employed slow or gradual dilatation by the Hanks or Peaslee dilator, using one or two sizes at a sitting, and for six or seven years I have not once been called to follow the patient to her home on account of any ill results. I cannot understand why so many seem to be afraid of this method. I often let the patient wear a spiral stem of my own make in order to keep the cervix open following treatment. I have never yet seen any inflammation set up by this treatment if the cervix were kept open and drainage permitted. It seems to me

there is much more risk in curretting the uterus, tamponing the canal with gauze and leaving it in twenty-four hours, than in gradual dilatation and the use of the spiral stem. I have seen two or three patients die at the Woman's Hospital because applications were made within the uterus and free drainage was not secured afterward.

Dr. Waldo: In reply to the remarks which have been made upon constitutional treatment, I may say that in my paper it was stated that such treatment was desirable, and in many cases is all that is necessary. Regarding inflammation in the tubes and ovaries, I think that if there is any one thing which modern pathology has taught us it is that in almost every instance where there is a salpingitis there has first been an endometritis; further, that in nearly every instance where an endometritis lasts a long time, salpingitis develops. I fully agree with Dr. Chase, that sponge tents should be discarded; they have killed many women. Where dilatation has to be performed, I prefer the steel dilators, but one should not go to the extent of tearing the cervix to pieces, as has now and then been done.

XXIV. Operative Procedures in Uterine Displacements.

By O. E. HERRICK, M.D.,
GRAND RAPIDS, MICH.

For some years the gynecological surgeon has seemed to find his field for operation almost entirely within the peritoneal cavity. But for a year or two past operative attention has seemed to be returning to that rich field, glimpses of which were given us by those grand old pioneers in gynecological surgery, Sims, Peaslee, Thomas, and Emmet. All modern forms of plastic operation within the female pelvic cavity, no matter by whom devised, found their keynote in either their writings or teachings. In operations for uterine displacement it would seem necessary to follow in Nature's footprints as closely as possible, and to apply stays and fastenings at the points where Nature applied hers. If Nature had intended to hang the uterus in place and hold it there by a ligament attached to the top of the fundus and anterior abdominal wall at a point just below the umbilicus, surely one would have been placed there. If the round ligaments had been intended to either hold the uterus upward or forward, instead of simply steadying the body of that

organ held in place by other and more direct ligaments, then their ends would have been attached to the anterior abdominal wall at or above the umbilicus instead of coming downward to be fastened into the loose tissue of the labia majora. Good surgery must also be good mechanics, and either the architecture of the female pelvis is wrong or Alexander's operation must be bad mechanics. Again, when we notice that all the uterine ligaments intended as stays are without muscular fibre, one must conclude that neither contraction nor relaxation was intended; besides, each has a fixed point of attachment; the round ligament alone being the exception, having no fixed point of attachment and having muscular fibre in its composition; if that was not the case the ligament would surely be broken during pregnancy, for at that time it elongates at least twice its normal length and contracts again when pregnancy is concluded. When this ligament has been shortened by surgical means it sooner or later follows its physiological office and elongates again just as it does during pregnancy.

Sänger very truthfully says that a common cause of retroversion and retroflexion is relaxation of the sacro-uterine ligaments, and that instead of seeking to cure such displacements by fixing the fundus forward, we would do better to imitate the action of a pessary by drawing the cervix backward; a truth which the writer has time and time again asserted in articles published in medical journals for more than ten years. Sänger further says: "Freund shortened the sacro-uterine ligaments by suturing them through the posterior fornix, a method which Byford practised independently; while Herrick and Hunter denuded opposing surfaces on the posterior lip of the cervix." He then goes on to describe a method of his own, which is a combination of the two methods he mentions as done by Freund, Byford, Herrick and Hunter. And that method is almost word for word a description by the writer of an operation done by him for nearly two years and published in the *American Journal of Obstetrics* for March, 1891, which he must have known, else how did he know of the writer's method as described.

This plan of operation is as follows: The operator palpates the posterior surface of the uterus through both the rectum and the vaginal fornix and locates the sacro-uterine ligaments. A large, curved surgical needle threaded with a long, stout silk suture is now passed to the right into the posterior lip of the cervix and is

carried upward and backward an inch higher; is swept around and brought out through the posterior vaginal wall at a point half an inch lower than its point of entrance in the cervix. The ends of the ligature are secured, while a second is passed in a similar manner to the left. Each ligature includes the posterior wall of the cervix at the level of the attachment of the sacro-uterine ligaments, a portion of the upper surface of the ligament, and the peritoneum of the cul-de-sac.

The anatomical result of the operation is as follows: The cervix is carried upward and backward, and the anterior and posterior folds of Douglas's cul-de-sac are brought in contact and the sacro-uterine ligaments are drawn downward in the shape of a V, so as to be considerably shortened.

This is quoted from Sänger's article written October 31, 1891. I now quote from my own article published in the *American Journal of Obstetrics* for March, 1891:

"The whole of the posterior uterine neck and Douglas's cul-de-sac may be denuded; or the upper part of the cul-de-sac may be left and the denudation made a little lower down, so as to take up some of the slack in the posterior vaginal wall. The first suture should be introduced through the membrane of the cervix, with a curved needle of as great length as can be used through the speculum; then it should be carried high up through the wall of the cul-de-sac and as close to the uterus as possible, when the operator will distinctly feel the needle pierce the utero-sacral ligament; then he should carry the needle well back and as close to the rectum as possible, when he will again feel the needle as it is inserted into the ligament; after which it should be carried back and out through the cul-de-sac close to the edge of the denudation, when the silver wire can be drawn just moderately tight and twisted. The operator will at once have the gratification of seeing the uterine neck drawn well upward and backward into its proper place. After the first deep suture is taken, then the other superficial sutures may be introduced to unite the cervix and cul-de-sac. Before the deep suture is taken the operator should pass the finger into the rectum and, as the uterus is thrown forward with the sound, he can distinctly feel the utero-sacral ligament as it pulls upon the wall of the rectum to which it is attached. While introducing the deep suture he should keep the finger in the rectum as a guide to avoid puncturing it. As will be readily seen, when the

deep suture has been passed the utero-sacral ligament is folded upon itself, and union takes place between these folds and also to the wall of the cul-de-sac, which shortens the ligament more than one-half and makes a firm point of support to the cervix, as will be seen after union by the deep dimple at point of union of ligament and vaginal wall. In two cases I passed two deep sutures, one on each side—that is, after passing the one on the right side, the patient was turned over and another passed in the same way through the left side. But the uterus seems to stay just as well after shortening only one ligament; whether in time it will prove better to have shortened both I cannot now say."

Since that article was published, I have operated on twenty-three cases, and in all passed two deep sutures, every case has been a complete success so far. Dr. Mundé in an article published in the November number of the *American Journal of Obstetrics* upon this subject, says: "Anteversion of the uterus by attaching the cervix to the posterior vaginal vault, is technically the most simple and least dangerous method and theoretically would appear to be quite feasible and effective." But he thinks it has not stood the test of time, because of the danger of the parts pulling away after a time. The fact is, it has only been done by a few operators, and in their hands a fair proportion of cases have held well. I do not think Dr. Mundé wrote his article after the combination of the two methods was described, or he would have mentioned that plan of operation, for I am sure he would be incapable of unfairness.

DISCUSSION.

Dr. George M. Edebohls, of New York: My view is that the only function of the round ligaments is to hold the uterus in its normally anteverted position, and that they are very effectually placed for that purpose. Furthermore, it has been shown by numerous operations that shortening the round ligaments does have the effect of holding the uterus forward. The Alexander operation performed properly and in suitable cases is one of the most certain in its results of all gynecological procedures. There are cases of posterior displacement which can be readily cured by shortening the utero-sacral ligaments, as advocated by Dr. Herrick, but I do not think the operation is as physiological as that of shortening the round ligaments. It causes adhesions; in other words, some intra-abdominal disturbance, which

the latter method avoids. There is a possibility, too, of puncturing the rectum and setting up sepsis.

Dr. F. F. Dow, of Rochester: In one case of lacerations with extreme retroflexion I resorted to a novel operation. The lacerations, though quite deep, were made still deeper by incision, the uterus replaced by instrument, and while this was yet in the cavity I sewed up the lacerations and cut away the overlapping portion of the anterior lip. No trouble followed, and the organ remained in place.

Dr. I. S. Stone, of Washington: Few women come to the surgeon for treatment, having posterior displacement, unless there is also adhesion to other structures, or some other disease present, such as salpingitis. I am connected with a hospital in which no operation is permitted unless it is advised by all the consulting doctors, four in number. It has so happened that during the past year not a single case of retroflexion has been operated upon, for the reason that one or more of the surgeons thought the symptoms did not warrant it. Where the symptoms are of a nature calling for an operation, there is likely to be a salpingitis or other complicating condition, which would make a simple Alexander operation, or shortening of the utero-sacral ligaments as described by Dr. Herrick, useless if not dangerous. An operation of greater importance is called for than either of these.

Dr. Herrick: I have hardly thought of the danger of the operation described, it is so slight in the hands of one knowing the anatomy. With the patient in Sims's position and the vagina "ballooned," the intestines are entirely out of the way. I repeat that it is not in accord with good mechanics to try to antevert the uterus by the round ligaments. Then, what is there to prevent them from elongating again? As to Dr. Stone's statements, if it is not necessary to treat patients with displacements, it should be stopped, pessaries thrown aside, and all given up in the way of mechanical treatment.

XXV. The Methods of Administering Galvanism in Gynecology.

By WILLIS E. FORD, A.M., M.D.,

UTICA, N. Y.

Now that it can be no longer doubted that electricity has won for itself an important and a permanent place among those measures employed in the management and cure of diseases peculiar to

women, it seems a proper time to examine the causes of failure of many honest workers with this agent, and to review some of the facts that have brought it up to its present position.

In the first place, men who were foremost as operators when galvanism came into prominence had not the time, or perhaps the inclination, to acquaint themselves with the electrical facts which have since then been found to be necessary for its successful use. Others, who had not achieved marked success as gynecologists, became enthusiasts for electricity, but failed to achieve satisfactory results because they failed to make accurate diagnoses, and this is as fatal in galvanism as it is in surgery.

It is as easy for an expert gynecologist to fail with galvanism until he has adequate apparatus and information regarding it, as it is for an enthusiastic believer in electricity to fail, if he lacks skill in diagnosis and experience in gynecological work. To my mind, the want of success in many cases has been due to the difficulty experienced in obtaining a proper outfit for the work. Any generator of electricity, that at its best cannot produce a current of sufficient volume to effect an appreciable amount of electrolysis outside the body, cannot be expected to do it within the body. If it cannot produce electrolysis, it may, by adding a number of volts, produce chemical cautery, but this is not what is aimed at.

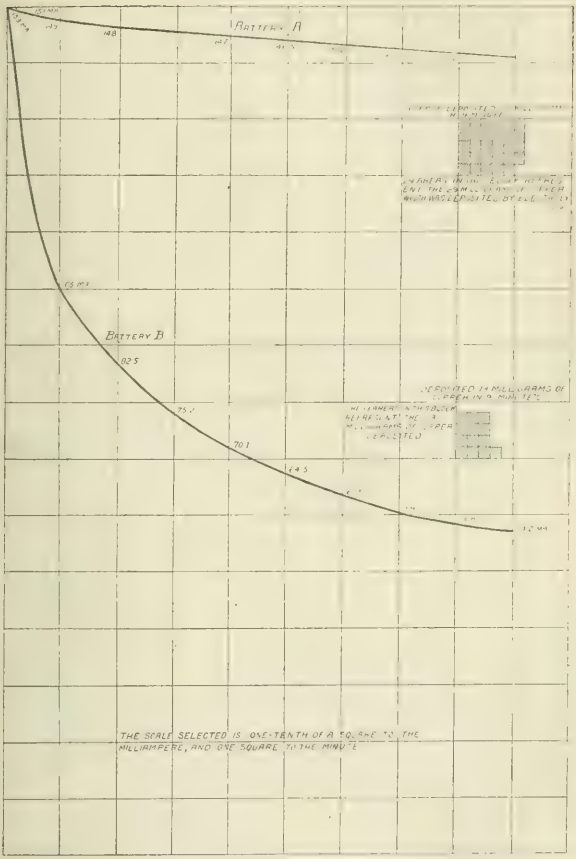
It is probably true that in a large number of instances where electrolysis is aimed at, the current used is only sufficient to stimulate the tissues through which it passes. The single fluid batteries, such as are commonly sold by instrument-makers, have such small cells, that when connected up in series they give a current of such small volume that no electro-plater would think of using it for a moment to produce electrolysis outside the body—as, for instance, in nickel-plating. The volume of the current so rapidly declines, too, where the resistance in the circuit is small, as it is in gynecological practice, that at the end of two or three minutes there is scarcely anything left of the current. Of course, if the resistance in the circuit is great, the volume does not decline so rapidly. But it is in just this respect that ordinary gynecological work differs from general routine work with galvanism, for in the former the resistances encountered are small—250 to 350 ohms—while in routine general practice the resistances are often six and ten times as great. Hence gynecological work does not require the voltage in the current, but rather the ampèrage that shall produce the

necessary electrolysis, with sufficient voltage only to push the current through.

I am aware that Ohm's law is quoted in this connection to prove that it matters little what the current on the free circuit measures before you introduce your resistance (the patient) into the circuit, for the milliampèremeter will read exactly the same whether the ampèrage be large or not. It has occurred to me, however, that the electromotive force may be a different factor in mechanics from what it is in discussing the equation that is worked out when living tissues are involved. Who knows, for instance, what becomes of that portion of the volume of current that is sent into a tissue and does not come out again, as indicated by the milliampèremeter on the circuit. This little instrument never measures any part of that electrical force which is transformed into chemical energy within the body, thus producing what we call electrolysis. It only measures that part of the current that escapes out of the body, and it is a singular thing that it acts very much like a voltmeter, and where the resistance encountered is considerable it becomes a voltmeter in fact, and does not measure the ampèrage of the current. These facts have led me to believe that the measurement of the current without any resistance in the circuit which will give definite information as to the capacity of the battery, is of as much importance, if not more than the reading of the milliampèremeter. Every instrument used for gynecological purposes should be measured up and its power, both in volts and ampères, should be plainly marked on the instrument. It should also be remembered that when batteries run down, as it is called, becoming weak because the fluid is old or because the elements are badly corroded, it is the volume or ampèrage of the current that disappears sooner than the voltage.

The power of the common bichromate of potash battery to produce electrolysis is distinctly shown by the accompanying charts, which exhibit the actual work done by fifty small cells as compared with the work done by six large cells in the same length of time. In both instances the electrolyte was the same, and the resistance the same, the latter being about what is encountered in ordinary gynecological practice. (Charts 1 and 2.) We might as well ignore asepsis in abdominal surgery, when speaking of the results obtained, as to ignore these electrical facts when speaking of the results obtained in gynecology from the use of galvanism.

CHART I.



Battery A.—Six one-quart cells, in series. Volts, 10.2. Ampères, 3, in preliminary short circuit measures. R + r = 66.6 ohms. Current worked through this resistance: at first, 153 milliampères, and closed with 144 milliampères. Fall of ampèrage, 9 milliampères. Time, 9 minutes. Battery A, after work, measured 10 volts and 2.5 ampères.

Both batteries had enough resistance coils put in the circuit so as to make them

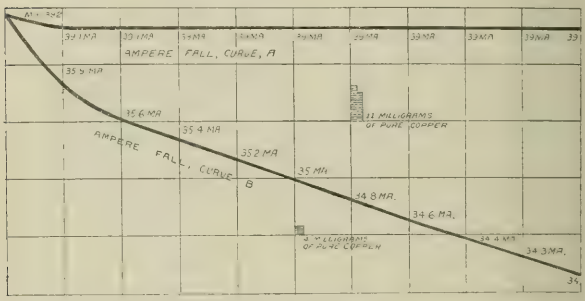
start even, at 153 milliampères, when they began upon electrolysis. This is what a physician requires, and is the only way to compare batteries engaged in electrolysis. For electrolysis the large-cell battery with large ampèrage is much superior to the many-celled battery of small cups with small ampèrage, which runs down so soon it cannot do the work required of it.

Battery B.—Fifty quarter-pint cells, in series. Volts, 80. Ampères, 0.3. R = 250. r = 80. The current began working with 153 milliampères, same as the other, but fell in 9 minutes to 54 milliampères—an electric fall of 99 milliampères. The copper deposited was 13 milligrammes. Both batteries were in same conditions of fluid, temperature, etc. Time, 9 minutes. Battery B, after work, measured 55 volts and 0.2 ampère.

Take notice: The resistance being comparatively small, both batteries worked vigorously. Moreover, a bichromate battery recovers its power so quickly after usage that subsequent measurements at rest do not accord well.

Here the voltage seemed to fall considerably faster than the ampèrage, proportionally. In all trials I noticed this was so.

CHART 2.



Comparison of two batteries as to power of electrolysis. Battery A of 6 large cells. Battery B of 50 small cells. All conditions alike in both.

Battery A.—Six cells, one quart, in series. Resistance total in conductors, meter, battery, and copper sulphate solution, 300 ohms. Time, 10 minutes. Pure copper deposited 11 milligrammes.

Battery B.—Fifty cells, quarter-pints, in series. Total resistance in battery, conductors, meter, and copper sulphate solution for electrolysis, 300 ohms. Time, 10 minutes. Pure copper electrolytic deposit was 4 milligrammes.

It is not safe to use this agent in every case of doubtful diagnosis, nor is it wise to use it in many of the disorders of women; it is no more a cure-all than is the hot vaginal douche or the abdominal section. If there has been a suppurative process of even quite ancient date about the uterine appendages, galvanism may, and often does, light up a process of destructive inflammation. If, on the other hand, there has been a hydrosalpinx or a peri-uterine

inflammation that has left fixation of the uterus and has interfered with the pelvic circulation, galvanism offers a more speedy relief than any other treatment, and in this case the volume of the current should be very large, six or eight ampères, with not more than sixteen volts to push it. The application is best made in the following manner: The positive pole is attached to a dispersion plate of perhaps a foot square, which is thoroughly wet with some alkaline solution and firmly placed over the lower part of the abdomen. This can be done without removing the clothing or exposing the patient. The vaginal electrode attached to the negative pole of the battery may consist of any metallic substance the size of an olive or as large as a walnut, completely covered by a film of cotton held in place by a rubber band, and the handle of the instrument, being insulated by soft rubber tubing, hard rubber or wood. The examining finger determines the point of resistance or the position of the exudate, and against this the applicator is firmly pushed. Now turn on one cell after another by means of a simple switch until the milliampèremeter marks 40 or 60, and continue the application for ten minutes. A large, blunt electrode covered with platina foil or ending in gas carbon is the kind I usually use, though as good results may be obtained by improvising one as described above. There is no need for an antiseptic douche before or after thus using the negative electrode, for the movement of fluids caused by electrolysis is from the positive toward the negative pole, and the vagina acts as a drainage-tube. It is better to work without resistance coils or water rheostat, so that the whole volume of the current is utilized from the first, and the only resistance is that of the patient, and the voltage is added until this resistance is overcome, as indicated by the milliampèremeter.

I am convinced that these applications need not be made oftener than every third or fourth day to secure the best results. In case there are any extensive adhesions that generally follow after certain pelvic inflammations, the current should be given more voltage and the milliampèremeter made to read as high as 150 or 200, for the reason that these adhesions are poor conductors, and, unless the current has pushing power or voltage in abundance, it will find its way around the greater resistances, and the adhesions will not be materially affected. If galvanism never accomplished anything else, its power of removing pelvic exudates and of releasing from adhesions the uterus and its appendages would entitle it to rank as

high as any other therapeutic measure in gynecology. The slight pelvic inflammations in young women who, for instance, catch cold during menstruation and who afterward have menstrual irregularities with pain, often produce an arrest in the development in the organs, and result in after years in grave uterine and ovarian disease. The original lesion is probably a slight hydrosalpinx, and the resultant adhesion interferes with the nutrition of the organs. In one case of this kind, the result of tobogganing, the menstruation entirely ceased within a year, and the most alarming anæmia with nervous symptoms came on. This young woman, about twenty years old, was not relieved until galvanism was used as above indicated. She then speedily recovered her general health. In this case the displacement of the uterus which I expected to find was not marked, but both broad ligaments were tense and thickened, showing there had been marked infiltration. Not more than six or eight applications of galvanism were used, the vagina was not stretched nor the hymen torn, and I think the treatment was as unobjectionable as the prolonged use of hot douches, and certainly less objectionable than cotton tampons. These cases are not uncommon, and they merit more attention than they receive from gynecologists.

I believe the arrest of development of the uterus and ovaries may often be prevented by releasing these organs from the products of inflammation, which will restore normal circulation to the parts. I had intended to relate cases illustrating this phase of gynecology, but the limits of my paper will not permit, and I will simply reiterate the opinion that galvanism has as few objections, and accomplishes the result more speedily than other methods that I have tried. In the opposite conditions of chronic enlargement of the uterus it is better to introduce a sound either covered with platina, or with cotton securely fastened, or one having a gas-carbon olive-shaped tip directly into the uterus, and then, as before, use a current of volume without much voltage for a period of ten minutes once a week. The milliampèremeter need not register more than 30 or 40. The secretions in this application are so changed as to cure many cases of vaginitis that with me have resisted every other method of management. It is not true that currents of electricity of this kind cause sterility. I have seen pregnancy take place immediately after half a dozen such applications, and notably in one case this winter pregnancy occurred for

the first time though the patient had been married for nine years. I believe, however, there is an objection to currents of high voltage that may cause destruction of the endometrium, and that this objection has been urged with justice by the opponents of galvanism. So much has been written about the treatment of fibroid tumors that in this paper I shall only speak of the methods of application without referring to statistics. Subperitoneal fibroids, and especially those that have been pushed away from the uterus until a distinct pedicle or stalk only attached them to the uterus, cannot be materially benefited by galvanism because, as a general thing, the current cannot be directed through them. However, in case of their impaction, or of their causing localized peritoneal inflammation and adhesion, galvanism is useful in relieving the pain and in restoring their mobility. This may oftener be accomplished by using a very large sized vaginal electrode attached to the negative pole of the battery and crowded up against the mass, the positive pole being as small as will simply cover the mass to be treated, so that the current may be as much condensed as possible at the positive pole. Sometimes even two abdominal electrodes may be used, and the current sent through from side to side. Where the fibroid is intra-mural and the cavity of the uterus can be entered whether the fibroid be large or small, the current of large volume will reduce its size, and in many cases cause it to disappear. It seems to me that the doctrine recently taught in certain quarters that small and rapidly growing fibroids in young women ought to be removed early by abdominal section, is most dangerous and unnecessary. It rather smacks of special pleading in justification of an operation that is not necessary. Placed side by side with galvanism, abdominal section for small fibroids lacks the one justification for every capital operation, namely, necessity. These smaller growths—not exceeding perhaps a cocoanut in size—can be in a large majority of cases wholly removed by galvanism, and they rarely endanger life without operation. It is useless, however, to attempt their removal by a current of electricity so small in volume as to give feeble electrolytic results. Where the tumor, however, is large and the cervical canal cannot be entered, then the more serious process of puncturing the protruding mass through the vaginal wall must be considered. The reckless use of the needle has oftener brought galvanism into disrepute than otherwise. The puncture ought not to be made deep, and, if this is always observed,

bloodvessels of considerable size can be avoided, and the danger of the proceeding is reduced to almost nothing. The current should be as large as in intra-uterine applications, and the milliampèremeter may mark 150 to 200. This, however, is not safe outside a hospital, and ought not to be done by one who has had no experience in gynecology. It is better to make the interval between all those applications in which large currents are used four days, and, if much soreness and pain result, six days should elapse between the applications.

XXVI. Two Successful Cases of the Conservative Cæsarean Section.

By CHARLES JEWETT, A.M., M.D.,
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The operations referred to in the title of this paper were done in December last at the Long Island College Hospital. Both the women were primiparæ.

The first patient was a woman of English birth, thirty-two years of age. With the exception of a chronic nephritis, she was apparently in fair health. No important uræmic symptoms appeared at any time, yet twice after the operation there was partial suppression of urine, which was promptly relieved by moderate doses of diuretine.

The only outward signs of deformity were her small stature, four feet six inches (137.2 cm.), and a lumbo-sacral kyphosis, the summit of which corresponded to the fourth lumbar vertebra. The character of the spinal deformity is shown in the accompanying figure, which was drawn from a photograph taken three weeks after delivery. The compensatory lordosis above pitched the uterus forward, giving the abdomen an unusually globular and pendulous shape. The pelvic measurements were: Iliac crests, 11½ inches (29.2 cm.). Iliac spines, 10½ inches (26.6 cm.). External conjugate, 7½ inches (19 cm.). Symphysis pubis, 2 inches (5.1 cm.) deep. Diagonal conjugate, 4¼ inches (10.8 cm.) True conjugate estimated at 3¾ inches (9.5 cm.). Coccyx to subpubic ligament, 2¾ inches (7 cm.). Bisischial diameter, 2¼ inches (5.7 cm.).

The patient was admitted to the hospital in the evening of December 1, 1891, labor having begun at ten in the morning. At twelve midnight the waters had drained away, and the head had sunk well into the excavation. The os externum was dilated to the size of a half-dollar, and was dilatable. The child was small, the head within easy reach, and the case altogether a

favorable one for craniotomy. That operation was determined upon after consultation with Dr. Dickinson, of the attending, and Dr. Wallace, of the consulting staff. This decision, however, was reversed on learning that the woman was a Catholic, and the Cæsarean section was done by necessity, in deference to the requirements of her religious faith. The pulse shortly before the operation was 90 and weak, and the patient showed signs of approaching exhaustion.

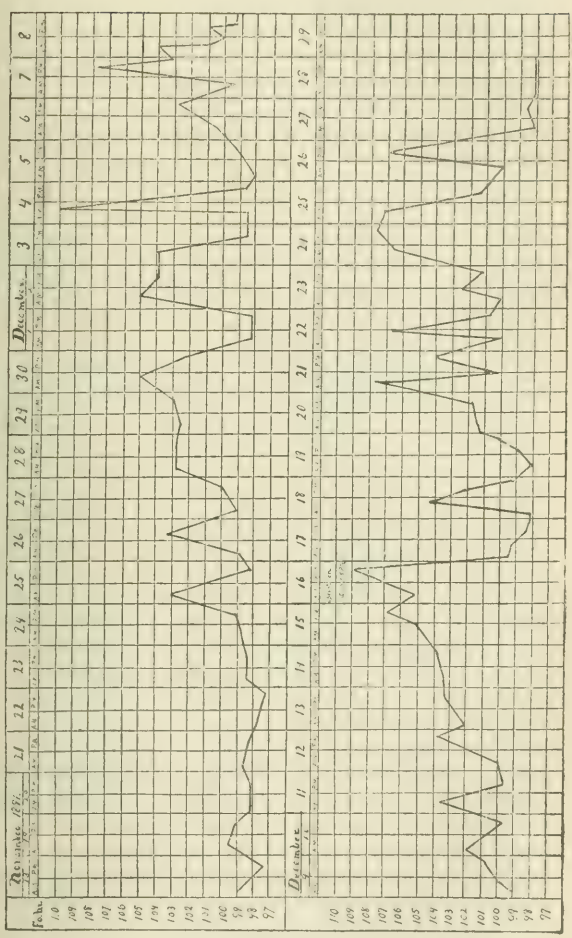
Operation.—First incision at 2.11 A.M. Some difficulty and loss of time in applying the cervical constrictor, which was a large, thin-walled rubber tube. Placental seat directly under the uterine incision. Hand passed over left edge of the placenta and through the membranes. Head extracted from the pelvic cavity with difficulty, and only after relaxing the grasp of the constrictor. Child delivered in four minutes from time of first incision. Cord clamped at two points with catch forceps, and cut between them. The child was alive, and respiration was promptly established. The uterus was drawn

up into the abdominal wound by traction on the provisional ligature, but not out of the abdomen. The placenta and membranes were separated by hand, and the uterine cavity left undisturbed. The uterine incision—which, owing to the strong forward inclination of the uterus, reached well up on the fundus—was closed with twelve deep silk sutures in seventeen minutes from the beginning of operation. Deep sutures included the decidua. Symperitoneal suture with fine catgut. Almost no handling, and no special cleansing of the peritoneum, a small amount of blood and bloody serum being left in the cavity. Abdominal incision closed with ten silk sutures, and dressed with a thick covering of dry gauze fresh from the steam sterilizer. Blood-loss no greater than in ordinary labor. The tonicity of the uterine muscles was apparently unimpaired by the cervical constriction, though a good deal of tension was required for a time to control the hemorrhage. Retraction promptly followed moderate manipulation and the injection of a half-drachm of fluid ergot under the skin. The patient made a good recovery. The lochia remained odorless, there was only a barely perceptible meteorism for a few hours, and at no time any evidence of sepsis. After the eighth day an occasional slight rise of temperature occurred, which was controlled by quinine. Five grains of calomel were given toward the end of the second day, and followed by a saline. The abdominal sutures were removed on the tenth day. Uterine involution was slow, but the woman was ready to leave the hospital by the end of four weeks, except for a sciatica which detained her for some time longer.

The child was a female, weighing 5½ pounds. The head measurements were: Bi P., 3½ inches (8.9 cm.). O. F., 4⅓ inches (10.8 cm.). O. M., 5⅓ inches (13.3 cm.).

The second case was that of a German immigrant aged twenty years. She was transferred to the maternity from the medical wards, with the following history: Subject to frequent hysterical paroxysms, with occasional convulsions; the attacks were frequently followed by semi-coma lasting for days. Badly nourished owing to anorexia and frequent emesis. Ejecta at times contained considerable quantities of blood. A notable feature of this case was the irregular and excessively high flights of temperature, which, several times before operation, mounted to 107°, once to 110° F. The temperature would generally fall in an hour or two nearly or quite to the normal without treatment. The temperature chart, which is submitted herewith, shows the thermometer record before and after delivery. The pyrexia was believed to be mainly or purely of neurotic origin. Some days before operation barely perceptible signs of beginning consolidation were detected at the apex of one lung, which were attributed by Professors McCorkle and West, who kindly examined the patient, to slight broncho-pneumonia. The lung cleared up in two or three weeks after operation, and the trouble was at no time sufficiently marked to be regarded as a factor in the high temperature. There was also an intense stomatitis, with patches and ulcers on the mucous membrane of the mouth and throat, attended with copious salivation and partial or complete aphonia. Post-cervical glands indurated. A careful laryngoscopic examination by Dr. W. F. Dudley substantially confirmed the diagnosis of syphilis in the second stage.

TEMPERATURE CHART.



The patient was of slight figure, four feet six and a half inches in height, and with no bony deformities, except of the pelvis, which was extremely flattened. Pelvic measurements were: Crests 10¼ inches (26 cm.). Iliac spines, 10¾ inches (27.2 cm.). External conjugate, 6¼ inches (15.9 cm.). Diagonal conjugate, 3¼ inches (8.3 cm.). Depth of symphysis pubis, 2¼ inches (5.7 cm.). True conjugate estimated at 2½ inches (6.4 cm.). Pubo-coccygeal diameter, 2¼ inches (5.7 cm.). Bisischial, 2¼ inches (5.7 cm.).

Labor pains began at 1 P.M., December 16th, at about the end of the sixth month of gestation, or a little later. Fundus well above the umbilicus. Waters escaped at 6 P.M. At 9.15 the cervix was not effaced, and admitted one finger with difficulty. While a piecemeal extraction of the fœtus or cephalotripsy would have been possible, craniotomy through a pelvis so narrow at both inlet and outlet would have been an awkward and difficult operation, to say nothing of the long delay that would have been necessary, owing to the unyielding condition of the soft parts. Cæsarean section was, therefore, decided upon mainly in the interest of the mother, though not wholly without hope of a viable child, Drs. Wallace and Hyde of the consulting staff and Dr. Dickinson concurring.

Temperature immediately before operation, 108° F.; pulse 98.

Operation.—First incision at 10.41 P.M. Troublesome protrusion of intestines from tympanitic distention. Provisional uterine ligature of large, thin-walled rubber tube, as before. Placenta attached anteriorly. Left edge separated, and child delivered in four minutes, alive and breathing, but not viable. Uterus lifted out of the abdomen. Membranes separated with difficulty. Uterus closed with ten deep sutures in fourteen minutes from beginning of operation. Decidua not included in the sutures. Symperitoneal sutures of silk. No flushing, and almost no cleansing of the peritoneum. Some blood and bloody serum left in the cavity. Abdominal incision closed with ten silk sutures, dressings as in the first case. Thirty minims of fluid extract of ergot were given hypodermatically. Temperature at close of operation 98⅘° F., pulse 90. The condition of the patient was very soon better than it had been for weeks before. The abdomen was distended on the second day, but immediately became flat after repeated and copious evacuations of the bowels with calomel and salines, and the tympanites did not return. The meteorism would probably have been avoided altogether had not the bowels been confined for one or two days before delivery. The temperature soon resumed its customary oscillations, but there was no bad symptom attributable to the abdominal section. At the date of this reading the patient is rapidly gaining weight, and is in better health than at any previous time since her admission to the hospital. Both these patients, I am in duty bound to say, are much indebted to the skilful services and faithful attention of the efficient house-surgeon, Dr. John O. Polak, both during and after operation.

The last case is my third Cæsarean section, all performed in the Long Island College Hospital. The first was done in December, 1883, and has already been reported (*N. Y. Med. Journal*, August

29, 1885). It was one of the first operations under the improved method of Sänger. The indication was extensive cancerous disease of the cervix, also involving the vaginal wall, with little or no dilatation of the cervix after twelve hours of active labor. The patient was in bad condition at the beginning of labor from pain, loss of sleep, frequently recurring hemorrhage, and the abuse of alcohol and opium. The pulse ranged from 94 to 108 for several days before labor. The operation was done during an epidemic of erysipelas in the hospital, and the mother died in forty-eight hours, of peritonitis. The infection was attributed to a septic contact which occurred through the inadvertence of one of the bystanders. Moreover, this operation dates back to a time when antiseptics were freely used in the peritoneum. Both the uterus and abdominal cavity were cleansed with more or less contact of the mercurial solution. The death was, I believe, a preventable one. There was no evidence, post-mortem, of sepsis in the uterine cavity, and the uterine incision was securely closed throughout. The child was living and doing well when it left the hospital.

Remarks.—Several observations of practical interest suggest themselves in connection with the two recent cases. I may say, first, that the entire procedure in both was made as nearly as possible microscopically clean. Instruments were exposed for fifteen minutes to dry heat of about 260° F. shortly before use. With the exception of the operative-field, the patient and the immediate surroundings were covered with cloths and sheets fresh from the steam-chamber. The hand-disinfection lacked the advantage of the permanganate method, but it was made as complete as possible by laborious and long-continued scrubbing with sterilized brushes, with the use of green soap, alcohol, and the mercuric iodide solutions. The sutures—with the exception of the superficial uterine sutures in the first case—were of silk which had been immersed for two hours in a soft paraffine wax at a temperature of 260° to 280° F., and subsequently sealed in a bottle of alcohol and steamed for an hour. A like degree of care was observed throughout, except that lack of time prevented any further attention to the room (which was the labor ward) than wetting the floor to suppress dust.

One matter in which practice differs in Cæsarean section is the provisional ligation of the cervix. The prevention of hemorrhage from the uterine incision is more satisfactorily accomplished by the use of an elastic rubber tube than by manual control, or by the

inelastic gauze band of Sänger. The objection to the tube that it is liable to injure the tonicity of the muscles, is obviated in a great measure by employing a large tube with thin walls which spread as it is drawn taut, and distribute the pressure over a large surface. In the two recent cases reported in this paper, though the placental site was incised in both, and forcible constriction was used, the contractile power of the uterus was apparently not in the least impaired. Neither manual nor instrumental control of the uterus, however, is absolutely essential.

A vital point in the Cæsarean operation is the accurate and secure closure of the uterine incision. In numerous fatal cases the death has been traced to gaping of the uterine wound and leakage of lochia into the peritoneum. Even a minute fistulous tract has been sufficient to cause the death of the patient. The improved results of the modern operation are largely due to the attention which has been given to the accurate closure of the uterine wound.

Some difference of practice obtains in regard to the avoidance of the decidua in the deep uterine suture. Sänger strongly insists upon the necessity for this precaution, and cites an experience of Macan's in which infection took place from the uterine cavity through the needle-tract. Zweifel, on the other hand, takes no pains to avoid the decidua, and his record is twenty-nine cases with but one death, and that a preventable one. Schauta's practice is similar, and he has done fifteen Cæsarean sections with no death. The entirely buried suture, however, would seem safer as avoiding all possibility of secondary infection of the needle-tract. The first of my recent cases goes to enforce this conclusion. The deep sutures in this case were passed into the uterine cavity. While the patient made a perfectly good recovery, a few days ago an abdominal fistula was discovered at the lower end of the cicatrix, which leads down, I assume, to an infected uterine suture.

The suture material which best serves the purpose and is now generally adopted is that which is most easily prepared and the most convenient in use—silk. While the ideal suture is one that will hold securely for the required length of time and then be absorbed, these conditions are not wholly met by catgut. Soft catgut has been responsible for several deaths by yielding too soon, and hard chromic gut has but little advantage over silk in point of absorbability. Moreover, a serious defect in catgut, however prepared, is the comparative insecurity of the knot.

Another moot point is the superficial uterine suture. The half-deep superficial suture which has been used by Zweifel, Kelly, and others is an important saving of time, yet there is a seeming advantage in completely closing the peritoneum in a welt over the deep sutures, as is still practised by Sänger.

Conspicuous points in the technique of the Cæsarean operation are the treatment of the uterine and the peritoneal cavities. It is the practice of Sänger and others, after the separation of the placenta and membranes, to scrub the cavity with a fold of gauze. In my recent cases the uterine cavity was left literally untouched after peeling off the membranes, and this seems to me the more rational procedure in the absence of infected fluids. The endometrium is left aseptic after removal of the secundines, and antiseptic douching or scrubbing is not only uncalled for but is injurious. Even decidual shreds, in the absence of sepsis, are better left to be cast off with the lochia. A septic uterus, on the other hand, should not be trusted to the conservative operation at all, but should be amputated.

A careful peritoneal toilette is generally deemed essential, as is a common rule in laparotomies. In the two recent cases above reported little attempt was made at cleansing the peritoneum. A small gauze compress was passed once in front and once behind the uterus to make sure that no accumulation of bloody fluid remained in the culs-de-sac. In both cases, and especially the second, the uterus and surrounding surfaces of peritoneum were everywhere soiled with blood when the abdomen was closed. The extreme care generally required in cleansing in other laparotomies is here, I believe, unnecessary. A healthy peritoneum, such as we usually have to deal with in a Cæsarean section, is less injured by a little blood, even if not absolutely aseptic, than by much sponging. The peritoneal epithelium is removed by sponging or handling, or even by irrigation, and the resisting, or antiseptic, power of the peritoneum is impaired, to say nothing of increased risk of adhesions. In the Cæsarean operation, with care to prevent the entrance of much blood and liquor amnii into the abdominal cavity, the usual peritoneal toilette may be almost wholly omitted.

Foreign authorities, and most others, so far as I know, have fixed upon the end of the first labor period as the preferred time for operating. This is done on the assumption that the establishment of labor before operating is essential to subsequent retraction

of the uterus and to free lochial drainage. An experience, however, of several cases operated before labor, to say nothing of a large number of deliveries by cattle-horn lacerations, which have been followed by sixty-nine per cent. of recoveries (Harris), is sufficient to show that this assumption has no foundation in fact. The obvious advantage of operating with deliberate preparation, before rupture of the membranes, and with the patient in full strength, furnishes a strong argument for an appointed time, if possible, shortly before the expected date of labor.

The main conditions of success in Cæsarean section are, obviously, asepsis and the accurate suture of the uterine wound. Reasonable rapidity, however, is important, and, as Harris observes, the length of time should not exceed three-quarters of an hour if the best results are to be expected. To these conditions I am disposed to add the early use of saline catharsis after operation. In the two recent cases a small dose of calomel was given and followed by salines soon after the first expulsion of flatus from the bowel. My experience—not alone in these cases, but a somewhat extensive one in analogous conditions—leads me to place a high value on early resort to peritoneal drainage by the intestines.

In conclusion, I submit that laparo-hysterotomy under modern methods is a relatively benign abdominal section. Its technique is one of the simplest in abdominal surgery, and the patient in timely operations is in good operable condition. Is it not reasonable to expect that the results of Cæsarean delivery in comparatively healthy women shall fully equal or exceed the best records of laparotomy in disease?

XXVII. A Case of Ectopic Gestation.

DEATH OF THE FŒTUS AT THE THIRD MONTH—FATAL HEMORRHAGE OUTSIDE THE SAC AT THE FOURTH MONTH.

By I. S. STONE, M.D.,
WASHINGTON, D. C.

Mrs. ——, colored, widow, aged forty (?), was admitted to Columbia Hospital on July —, 1891. She was the mother of several children, and had been a widow eighteen months. For four months she failed to menstruate regularly, and had been treated the entire period in dispensaries and hospitals without relief, and until the time of her admission denied the possi-

bility of pregnancy. Her condition indicated collapse, and a hurried examination was made, which gave me assurance that she was pregnant, that it was in the cavity of the broad ligament of the right side, and that hemorrhage was progressing.

As her pulse could not be counted, stimulants were used freely, and preparations made to open the abdomen at once, which was done about two hours after she was admitted. She had fainted twice during this time, and I now regret that I did not open the abdomen without the loss of time expended in trying to revive her.

When the peritoneum was opened a considerable quantity of fluid blood escaped, followed by much that was coagulated. The broad ligament, close to the uterus and at its distal extremity, was clamped with forceps, which quite effectually controlled the loss of blood. The removal of the clots from the pelvis exposed the sac to view, which was in and below the broad ligament, and was ruptured by my manipulations. A three months' fœtus escaped at once with the amniotic fluid, and the placenta followed closely after it without breaking the cord.

The lower part of the sac extended far down below the uterus, and in the lowest portion was found a considerable quantity of old, dark blood-clot. Very little hemorrhage appeared to come from the sac, and hot-water flushing served to check this and leave the abdomen in fairly good condition to close, which was done in about twenty minutes after the operation was begun. The patient's pulse appeared to improve under the anæsthetic, but she died soon after reaching her room.

Careful examination of the fœtus and placenta showed that "separation" must have occurred some weeks previous, as the fœtus was undergoing maceration, as evidenced by softening and separation of portions of epidermis. The old blood-clot in the sac probably indicated the time of the placental separation and fœtal death. Necrosis of the sac and vessels supplying it through the broad ligament caused the fatal termination, as the blood poured into the abdomen without hindrance.

It is quite certain that an operation done earlier might have saved the patient. The symptoms of extra-uterine fœtation were marked, and her history for the four months of her pregnancy gave every indication for active interference, yet she was treated for nearly every form of pelvic disease save the right one. She had frequent attacks of syncope, pain, and occasional discharges from the uterus; yet her statement denying intercourse had been taken in evidence rather than the actual physical signs.

In reviewing the literature of ectopic gestation I have been unable to find a case similar to this, and it shows that all danger to the life of the patient is not avoided when the death of the fœtus is accomplished.

XXVIII. Brief Report of Two Cases of Sudden Death During the Early Months of Pregnancy.

By CHARLES P. McCABE, M.D.,
GREENVILLE.

Case I.—Mrs. P., aged twenty years, of American parentage; mother of two children; apparently a healthy person, weighing about one hundred and thirty pounds. I saw her on January 16, 1891, for a slight attack of bronchitis. She gave, upon inquiry, symptoms of pregnancy, but expressed positive conviction that such was not the case, "because she had had no nausea;" with both her former pregnancies she had a great amount of stomach trouble from the very commencement. On the 19th of January, when I again saw her, the bronchial trouble was improved, but she complained of much sickness of the stomach, and feared pregnancy, which condition, later on, was confirmed by uterine examination. She urged the necessity of producing abortion, as a former medical attendant had informed her she could never live through another pregnancy. I insisted on trying to alleviate the vomiting by other means, and saw her daily until the 25th, when I left her much relieved, vomiting having ceased entirely. On the 30th she was about the house assisting at light work, and felt that she would probably get on without further trouble. I was again called on February 17th, and found a return of the nausea, increased in severity, vomiting being almost incessant, and nothing that I tried mitigated it in the least, excepting morphine, one-sixth of a grain, administered hypodermically; this had the effect of keeping her in a fairly quiet condition for a period of about ten hours. February 23d, she asked me to give her two hypodermics a day for a week or ten days, by which time she would have passed, she said, the period when the vomiting would subside of itself. As it was impossible for me to visit her twice a day, I made a practice of seeing her in the morning, giving the morphine, fixing the syringe for another administration, which her husband gave her when she began to suffer and get uneasy. February 26th, at 10 A.M., I found her looking better; her stomach retained quite a little nourishment, the expression of her face was better, and I felt quite encouraged about her. Her pulse during the past week had been somewhat accelerated, the temperature ranging between 99° and 100°. The heart's action was rather weak, but I could discover no lesion. The kidneys acted well, and there was no albumin in the urine. On the morning of February 27th, at 7 o'clock, she asked her husband to assist her to the commode; he lifted her from the bed for that purpose, when he noticed a peculiar helplessness about her, and immediately laid her back upon the bed, and she was dead.

Case II.—Mrs. H., aged nineteen years, of American parentage; a healthy-looking young woman; mother of one child, which lived to be a few months old; sent for me in haste on the evening of February 27, 1891,

I found her having intense pain over the uterus and across the lower portion of the back, simulating the after-pains of labor. After making a cursory examination, I gave one-quarter grain of morphine hypodermically, which made her comparatively easy within a few moments. I ascertained that the patient had miscarried the night before, having been, I should judge by the fœtus and membranes shown me, about two and a half months pregnant. Upon digital examination *per vaginam* I found a normally contracted uterus, with a sufficient amount of lochial discharge. There was no abdominal tenderness, no elevation of temperature, but a rapid and weak heart-beat. I left her at 11 P.M. fairly comfortable. At 1 A.M., February 28th, I was sent for again, and upon my arrival found her dead. At 12.45 she suddenly sprang from the bed with the exclamation, "I can't die here!" and before she could be seated in an easy-chair standing near she had expired.

The histories of these cases have some points of similarity, namely: 1, the suddenness of death; 2, the term of pregnancy being about the same. Case I. did not miscarry, nor make any attempt to produce a miscarriage. Case II. doubtless took some means to bring on her abortion, and succeeded.

What the cause of this sudden death in these two cases may have been I do not undertake to say. Autopsies were not secured, and I have only the symptoms and conditions as I found them to report. It may be a question whether in the former an induced abortion might have been warranted. The possibility of septic conditions having arisen in the latter case could not have been, in the short period of time that elapsed after the commencement of her sickness.

XXIX. Asepsis and Antisepsis in Obstetrical Practice.

By GEORGE SEYMOUR, M.D.,
UTICA.

Asepsis is defined as "the condition of non-putrefaction; absence of all septic material or microörganisms;" antisepsis, "the power to prevent or destroy putrefaction, or, what is the same thing, the bacteria upon which the putrefaction depends." So long as and whenever asepsis prevails, antisepsis is needless. Whenever and wherever the former ends, the latter should begin. This proposition should apply to the practice of obstetrics as well as surgery.

Outside of lying-in hospitals antiseptic measures for women in labor have not been as largely adopted or regarded as essential as for surgical procedures; and, furthermore, it is also true that among the larger portion of childbearing women and those who care for them in confinement, asepsis is not considered to be of the real, vital importance which it is. Those who have seen the significant transformation in large lying-in hospitals, either in Europe or America, from a state of puerperal septicæmia among women in confinement, causing a mortality of 10 per cent. or more, together with the great amount of prostrating illness of those who did not succumb to its virulence, to a state of almost complete immunity from septicæmia after asepsis and antisepsis have been thoroughly enforced thereat, need no persuasion as to the merits of modern antiseptic midwifery.

Many who in private practice have experienced the realities of caring for cases of genuine puerperal fever, with some proportion of them ending in death, must regard asepsis and antisepsis with greatest favor. The escape from sepsis of the vast number of women who have passed through the puerperal state, accompanied or not by complications, dystocia, turning at the hand of the physician, or instrumental delivery with no regard to asepsis or antisepsis, is no argument against their observance. On the other hand, every case of puerperal fever, every case of lingering illness therefrom, every death in consequence of it, is a standing reproach for the non-observance of antiseptic measures. They can do no harm if not absolutely needful, and they will protect against puerperal septicæmia and its very frequent fatal results in a very large proportion of cases when carefully and thoroughly enforced.

The fact that puerperal septicæmia is of microbic origin being well established, and that micrococci of erysipelas, scarlet fever, diphtheria and pyæmia, resembling the characteristic round micrococci in chainlike groups of puerperal septicæmia, may produce septicæmia if introduced into the system of a woman in the puerperal state, renders it needless at this time to discuss the etiology and pathology of the malady which antiseptic measures will avert or abort. My chief purpose is to give emphatic indorsement to the practice of antisepsis in obstetrics, and to urge the feasibility of its use in private general practice as well as in lying-in hospitals.

The first step in carrying out the principles of antiseptic mid-

wifery should be the attendance of competent obstetricians upon all cases of confinement. In the present state of obstetrical practice this cannot be fully secured. It is humiliating to admit, and a painful fact to realize, that, in the Empire State of our Union, where the popular opinion prevails that there is a larger number of medical graduates and practitioners than the general requirements of communities demand, one-third of the births of children in cities of ten thousand inhabitants and upward, are superintended by midwives, many of whom have not even the ordinary skill and knowledge of a competent nurse. In New York City, the centre of medical science and art in this country, where reside men of the highest attainments in every branch of medicine, nearly 50 per cent. of the births reported at the city registry are attended by midwives. So long as this state of affairs exists it will be impossible that all confinements shall be conducted on the principles of asepsis and antisepsis.

This should be no excuse for competent obstetricians to neglect practising so far as possible the better methods, but, on the contrary, should be an incentive to their adoption, so that the difference between skilled and unskilled midwifery may become more strikingly apparent to the general public, creating thereby a just and forcible demand for the services of well-educated physicians in obstetrical cases.

No surgeon in these times thinks of performing either minor or capital operations without strict antisepsis being enforced. Every case of childbirth should be regarded as a case of surgery so far as sepsis is concerned. The internal surface of the uterus whence the placenta is detached is a large wound in prime condition for absorption of any casual infectious matter that may come in its way. The poisons of puerperal septicæmia may be brought in contact with the genitals by the hands of doctors, or nurses, by instruments, sponges, dirty cloths, cotton or unclean clothing, and it may also be suspended in the atmosphere and absorbed therefrom by the parturient patient.

Bearing these facts in mind, physicians and nurses should be rigidly scrupulous in rendering themselves aseptic, if need be by antiseptic measures, before approaching a case of confinement. Previous attendance on cases of puerperal fever, any septic disease such as diphtheria, erysipelas, and scarlatina, or any suppurating condition incident to surgical cases, renders both physician and

nurse liable to carry to the lying-in room germs which may generate septicæmia. We do not need the teaching of modern antiseptic practice to substantiate this truth, for those of us who were in practice before its day have experienced its reality.

Assuming that physician, nurse, and other attendants who may have to do with ministrations upon the patient have rendered themselves aseptic—if necessary by antiseptic bathing, especially scrubbing the hands and arms first with soap and water, then with bichloride or creoline solution, using nail-brush and knife-blade, and by change to clothing that is completely free from septic germs—the next consideration is the condition of the confinement room and bed.

An ideal confinement room is one prepared like that for a regular laparotomy, all carpets, rugs, and hangings, which might possibly retain any sepsis, being banished, and nothing but the plainest, simplest, and most necessary articles of utility allowed to be in the room. This, of course, in general private practice cannot usually be fully secured, but the nearer a confinement room is furnished and prepared like a laparotomy room the greater will be the safety from infection from such sources. The bed should have fresh, clean sheets and pillow-cases, and other furnishings should be clean and plain as possible. This much can be secured in most cases in private practice unless the labor begins unexpectedly and progresses very rapidly. When a woman is taken in labor she should be given an enema and a bath, and every part of her person liable to be touched by nurse or physician, or to come in contact with discharges during labor, should be well washed in a warm solution of bichloride of mercury, 1 : 2000, or a 2 per cent. solution of creoline. She should also have a vaginal douche of two quarts of the same fluid, this in protracted cases being repeated every three or four hours. Her clothing next the person should be changed for that which is clean, and a sufficient amount of loosely fitting outer clothing, fresh and clean as possible and varied accordingly as the patient may be inclined to be up and about the room or in bed, should also be donned. The rubber sheet to be placed under the cotton sheet on which the patient is to lie, should be washed with a 1 : 1000 solution of bichloride just before she is put upon the bed. As few vaginal examinations as possible should be made by the physician during the progress of labor, and each time the hand should be well disinfected by creoline or bichloride solutions.

When the child appears at the vulva a napkin wrung out in a warm solution of bichloride, 1 : 2000, or creoline, a drachm to the pint, should be applied and kept there until the presenting part passes the vulva. After the expulsion of the child the genitals should be kept covered in the same manner until the placenta is expressed by Crede's method. If, in exceptional cases, it is necessary to introduce the fingers or hand into the vagina it should immediately be douched with the creoline or bichloride solution, and if the hands, fingers, or instruments have been introduced into the uterus, it also should be douched with a 1 per cent. solution of creoline.

After removal of placenta and clots the genitals and surrounding parts should be washed with a 5 per cent. creoline solution or bichloride 1 : 2000, and the vulva covered with an antiseptic occlusion dressing which may be varied according to circumstances. That described by Garrigues as used in the Maternity Hospital in New York is complete and cheap. Absorbent cotton alone or folded in cheese-bandage in form of a folded napkin, wrung out in the 5 per cent. creoline solution, makes a good first-layer dressing, and this covered with oiled silk or gutta-percha tissue dipped in the solution, together with an outside retaining muslin napkin, completes the vulva dressing. After the genitals have been dressed a binder, eighteen inches wide, should be pinned evenly about the body and made to extend down to the greater trochanters. The vulva dressing should be changed from three to six times in the twenty-four hours.

There is variance of opinion as to the use of vaginal douches after the birth of the child during convalescence. If asepsis has been perfectly maintained during labor, and there are no extensive lacerations, the douches may be omitted. My habit is to have at least one douche carefully administered each day as a matter of hygienic comfort to the patient. It is generally very agreeable to her, and in primiparæ encourages healing of any lacerations that may necessarily have been made. Bedpan, catheter, and other vessels used about the patient, and all instruments, should be kept clean with water and antiseptic solutions.

The principal truth which familiarity with antiseptic chemicals and measures has impressed upon the minds of the medical profession during the past decade is, *that cleanliness is the ideal desideratum in every department of medicine and surgery.* This being true,

it cannot successfully be maintained that asepsis and antisepsis in obstetrical practice are anything but essential. We may differ as to how they may be best attained and maintained, but I am sure we are progressing, though slowly, in the right direction by the adoption of the principal features of antiseptic midwifery as they have been taught and practised among us, especially during the past six years.

I am furthermore so sanguine as to hope and believe that ultimately from the seeming superabundance of doctors in our country there will come forth a class of men willing to do good scientific obstetrical work among the poor as well as among the rich, and that with the help of a better public sentiment, and, perhaps, some necessary legislation, many or all the inefficient midwives will fail to find employment in the practice of midwifery.

XXX. Four Cases of Orbital Traumatism resulting in Immediate Monocular Blindness through Fracture into Foramen Opticum. In one of these cases the Blow was over Left Orbit, causing Blindness of the Right Eye.

By PETER A. CALLAN, M.D.,
NEW YORK.

The ancients as far back as Hippocrates were aware that blows on eyebrows or skull were followed at times by immediate blindness. Hippocrates wrote that amaurosis sometimes follows wounds inflicted on eyebrows or head. During the past hundred years medical writers alluded to the possibility of sudden blindness following a wound on the head. The etiology was in doubt, Beers's theory being most in vogue, viz., that the injury to the supra-orbital nerve caused the blindness; to this, later writers added the infra-orbital nerve lesion as the probable cause.

Lawrence, in his work on *Diseases of the Eye*, gives in detail four cases, and remarks that, although the fact appeared to be well established, no one furnished in detail any cases, referring especially to Beers and Wardrop, who had written on this subject. Since Lawrence's time there has been no lack of recorded cases, but it remained for R. Berlin to establish, on a sound basis, the true pathology. At

the twelfth meeting of the German Ophthalmologists at Heidelberg in 1879, Berlin, besides reporting three of his own cases, gave an analysis of Von Hölder's very careful autopsies of 126 fractures of the skull. Von Hölder for many years filled a position corresponding to a medical coroner. During thirty-three years of such medical work, Von Hölder made careful autopsies of 126 persons who died from fracture of the skull. In 88 of these 126 the lesion involved the base, and in 80 the orbital roof was likewise fractured—or, in 90 per cent. In 54 cases (60 per cent.) the fracture involved the optic foramen.

Unfortunately these cases had no clinical data, but at the same time they established beyond doubt the frequency with which the optic canal was involved. In 42 the injury was a gunshot wound, through mouth or temples; in 11 the lesion was caused by falling on the head, and in 1 case the head was run over.

In the cases where death does not result from the injury, the patient is stunned or dizzy, may suffer from shock, bleeds from the ear, mouth, or nose, and discovers that his eye is blind; there may be œdema of the eyelids; eye is diverged and protruded; pupil enlarged and irresponsive to direct rays of light. Ophthalmoscopic examination immediately after injury is negative, but within two weeks at the very utmost pallor of the optic nerve is noticeable, and often much earlier. Some regain the ability to count fingers at some feet distant, but the eye remains divergent, with pupil enlarged; optic nerve atrophic.

The explanation of the fracture involving the foramen opticum, as it appears to my mind, is as follows: The frontal bone unites with the nasal, submaxillary, lachrymal, and ethmoid bones by a continuous line of sutures, until the lesser wing of the sphenoid is reached, and at this point the suture line bifurcates, forming an obtuse angle, and quite near the apex of this angle is the foramen. The jar made by the blow would find its weak point along this line, and the first resisting point would be at the bifurcation near the foramen opticum. The movement or jar could not follow both lines equally at the bifurcation, and the unequal strain would result in a fracture of the bone into the foramen opticum, causing compression of the nerve and sudden blindness.

Case I.—G. F. S., aged twenty-three years, artist, was brought to me March 3, 1890, while suffering from shock, and from his companions I learned that, while fencing with a friend, a thrust of the opponent's foil had

broken through Mr. S.'s mask, and the buttoned point had entered the right orbit between the nose and eyeball. I saw patient forty minutes after the accident, and then the right eyeball was somewhat protruded and displaced down and outward. Chemosis and ecchymosis of lower ocular conjunctiva, with a slight irregular tear of conjunctiva over the body of the (right) internal rectus muscle. Eyeball immobile, pupil, dilated almost *ad maximum*, and not responsive to direct rays of light, but consensually with fellow eye. Total loss of light-perception.

Ophthalmoscope showed a slight haze of fundus, but not enough to prevent a good view of optic nerve and media. At the end of the first week after the injury the protrusion and displacement of the globe had disappeared, the eye diverged, and patient had control of all the ocular muscles except the rectus internus. Chemosis still remaining. Ophthalmoscope showed arteries and veins normal in size, with no haziness of media.

On the tenth day for the first time had some light-perception on nasal side; pupil moderately dilated and somewhat responsive to direct rays of light. At the end of third week well-marked beginning atrophy of optic nerve.

The patient has been under my observation ever since the accident. The atrophy is marked, but he still retains a small section of the nasal field where there is light-perception. Pupil larger than in the fellow eye; responds feebly to light when thrown on the iris. Slight amount of divergence, but patient can bring the eye well in toward the inner canthus.

Case II.—Ludwig M., aged twenty-four years, German, was admitted to the New York Eye and Ear Infirmary April 1, 1891. He complained of his right eye being blind, and gave the following history: At 1 A.M. of the day of his admission to Infirmary he was waylaid by a rival and struck over the left eye; with regard to what hit him he does not know, but thinks it was only the fist. For a moment he was stunned and dizzy, but did not fall nor become unconscious, and was led home by the young woman who was the cause of the assault. From the moment of the blow over the *left* eye he is positive that the *right* eye became blind. He bled from the nose and vomited blood, which must have been previously swallowed, and suffered from shock. When I saw him, fifteen hours after the injury, there was a slight abrasion of the skin of upper eyelid (left eye), extending toward the nose, with some œdema of both upper and lower eyelids. Movements of the left globe normal. Ophthalmoscope showed hyperopic astigmatism. V = 20/XXX, and with + 1.00 cyl. 90°, V = 20/XX.

Right eye totally blind. Movements of globe normal; no divergence or protrusion; some conjunctival injection; pupil widely dilated and only responded consensually to light, direct rays having no effect. Ophthalmoscope gave normal fundus. Seventy-two hours after injury ptosis marked, and ninety-six hours ophthalmoplegia externa. One week after his admission to Infirmary the optic nerve of right eye began to grow pale, and in three weeks the atrophy was marked. April 15, 1891, two weeks after the injury to his left eye, the right eye began to have some light-perception in the upper nasal field, and he could move eyeball to a very limited extent. Ptosis not so pronounced. May 11, 1891, six weeks after injury, the move-

ment of eyelid and globe had greatly improved, but there was a slight divergence; pupil not so dilated. Can form a fair estimate of large objects when held about eighteen inches in the upper nasal field. Can guess as to how many fingers are held up—more often right as to the exact number than in error. The atrophy has increased, with disappearance of the capillaries and total pallor of optic nerve. Since then the patient has not presented himself, and all my efforts to find him have been unsuccessful.

Case III.—M. H., aged thirty-four years; telegraph lineman. I saw patient October 3, 1891, for the first time, when he gave me the following account of his blindness: He was struck on the left outer orbital ridge with a lighted lamp thrown at him by a boon companion while both were in their cups, on the morning of September 20, 1891. He was dazed by the blow and staggered backward against the wall of room, which prevented his falling. As well as he could estimate, the lamp was thrown about ten feet. He felt slightly dizzy for a moment, but no nausea or other symptom of shock ensued. In less than one-half hour he was asleep. He awakened about 8 A.M. the same day, and discovered that his left eye was blind. Patient immediately consulted Dr. Henry Moffat, of Yonkers, who found an irregular wound of one and a half inches in length, extending up and backward from outer edge of eyebrow, likewise a slight abrasion of the inner half of skin of left upper eyelid. Marked œdema of both upper and lower eyelids, but not much displacement of the eyeball; pupil moderately dilated and total loss of light-perception. Dr. Moffat saw the patient again on the fourth day after injury, when he found the general appearance of parts much worse. The œdema had increased, and the lower eyelid was everted and very congested, with chemosis of eyeball. The globe was displaced slightly down and outward. I saw the patient on the 2d day of October, he having been referred to me by Dr. Moffat. Œdema of the lids had disappeared; eye slightly divergent; some redness of conjunctiva; pupil moderately dilated, which did not act to direct impingement of light, but acted consensually with the fellow eye. Ophthalmoscope showed some pallor of the optic nerve of left eye. Vision nil. Right eye normal.

December 5, 1891. Patient came after an absence of three weeks, and I found the divergence not so marked as at the previous visit. Pupil moderately dilated, but there was vision in the left eye amounting to the counting of my fingers at eight feet. Ophthalmoscope showed pallor of optic nerve more marked.

27*th*. Condition remains the same.

January 17. Ability to count fingers at about eight feet remains, but the atrophy of optic nerve is more marked.

Case IV.—Julius S., aged thirty years; trackwalker M. E. R. R. Patient fell from the track of the Elevated Railroad on the 9th of October, 1891. He was taken to St. Vincent's Hospital, where on examination the house-surgeon found blood coming from right ear and nose, left side of face contused with wound of left orbital ridge, and patient in a semi-unconscious condition. Three days after the injury I saw the patient. He lay in a semi-stupor, and when spoken to complained of pain in his head. The result of my questioning was, that patient in falling tried to save his face, and twisted

so as to avoid striking it. Complained that he could not see with his left eye. There was no swelling of the lids; the eyeball was slightly diverged, but he could move it well in toward the inner canthus; no protrusion of globe; pupil slightly enlarged, and direct rays of light thrown on left pupil failed to alter the shape, but it acted feebly (consensually) with other eye. Ophthalmoscope showed fundus normal. No light-perception. Pupil of right eye contracted. Saw patient at regular intervals, and at the end of two weeks there was decided pallor of optic nerve. Patient has been under observation ever since. Optic nerve atrophic; no light-perception.

The medico-legal aspect of this lesion is of considerable importance. I am fully satisfied that the optic foramina are frequently involved in fractures of the skull, but as most of the severe cases of fracture die, this lesion is neither looked for nor recognized. If the autopsy is not carefuly made, by removing all the dura mater within the cranial cavity, a fissure involving the optic foramen easily escapes attention. It has been my lot to see the four cases which comprise this paper within the past two years, which is remarkable from the fact that there are not more than eighty in medical literature.

XXXI. A Report of Cases of Glaucoma, of Different Varieties, Illustrating some of the Usual Means Practised for their Relief.

By OREN D. POMEROY, M.D.,
NEW YORK.

Case I.—Miss McG., aged twenty-five years, had acute inflammatory glaucoma of the right eye of ten days duration. The eyeball was very hard, much congested, and so painful that she had not been able to sleep for more than a week. Iridectomy was promptly done under ether. Complete relief was at once obtained from all the symptoms. The vision was not much lowered, but it quickly returned to the normal.

Case II.—Mrs. R. M., aged forty-eight years, received a penetrating wound in the right cornea from a carpet-tack. The lens was penetrated and soon became so swollen as to fill the anterior chamber. Increased tension of the eyeball and great pain resulted. This lens matter was extracted through a corneal incision, and the patient was at once relieved. Both eyes were bandaged after the operation. Four days subsequent to this, the left eye was observed to have defective sight, she being able to only count fingers at four feet. The corneal epithelium was somewhat hazy and the eyeball too hard. It being evening, an iridectomy was done by lamp-

light without difficulty. The patient at once completely recovered, the vision and increased tension being restored to the normal.

Case III.—Robert R., aged forty-one years, was struck on the left eye by a piece of iron-rust, from a hammer; this lodged in the cornea, and was removed by a fellow workman. The eye was very painful, but the removal did not relieve the pain; the patient still continued to work. The accident occurred three weeks previous to this observation. Four days subsequent to his first visit to the hospital, he was again struck on the same eye by a piece of emery; this was at once removed, but intense pain still continued. Atropine was found to aggravate the pain; warm water was used to bathe the eye. In a day or two the eyeball had increased tension, the cornea was hazy and anæsthetic; the anterior chamber was shallow and the pupil was widely dilated. There was considerable circumcorneal injection. The vision was = 5/cc. Eserine solution was instilled, and on the same day the pain disappeared, the pupil promptly contracted, the cornea began to clear, and the vision at once became doubled. Improvement continued for a few days, but on March 25th it was thought proper to perform a sclerotomy, which was accordingly done. Eserine was continued. On April 7th the tension was normal and the vision = 20/LXX, whereas on March 9th it was only = 5/cc.

Case IV.—Marg. M., aged sixty years. Ten years since an iridectomy was done on the left eye. Two weeks ago a severe pain appeared in the right eye, which has continued to the present time (July 10, 1891). There is intense ciliary congestion, steamy cornea, and shallow anterior chamber. The intra-ocular tension is increased. The nerve cannot be seen. She counts fingers at six inches. Eserine was ordered to be instilled three times daily. In three days the pupil had contracted and the tension was diminished. Continued eserine, and a leech to inner canthus; the latter repeated on the next day, which afforded some relief. July 18th, the tension being increased, injections of pilocarpine were used, leech repeated, and eserine continued. July 24th, the tension is normal, pupil smaller. Eserine was continued. On July 28th the patient was discharged. It seems to the writer that the pilocarpine exerted an important influence upon the patient. Subsequent vision was not recorded.

Case V.—Mrs. M., aged sixty-eight years, had had attacks of inflammatory glaucoma in both eyes, with all the symptoms of the disease, for several years. After three years the left eye became sightless and very hard. During the attacks of pain, relief, more or less complete, resulted from paracentesis of the corneæ, especially of the right. At the last bad attack of the right eye, the cornea becoming so opaque that little sight remained, iridectomy was reluctantly consented to, and was done under ether on each eye. The right recovered promptly, and vision reached = 20/XXX and so continued for ten years, until her death. The left eye continued painful after the iridectomy for two weeks, when it was removed, and found to contain an enormous blood-clot. It is worthy of remark that the repeated paracenteces—at least a dozen—contributed greatly to the relief of pain during the exacerbations.

Case VI.—Henry M., aged sixty-four years, has had chronic inflammatory

glaucoma in each eye for a year. The tension is increased in both eyes. He counts fingers at three feet with either eye. The visual fields are much narrowed. Optic nerves are cupped with beaked vessels. Eyes moderately painful. An iridectomy was done on each eye without affecting the tension. In four weeks sclerotomy was done, which restored the tension at once to the normal. The vision and the visual fields were unaffected.

Case VII.—Miss S., aged forty-six years, has signs of chronic inflammatory glaucoma in the left eye, dating back three months. The cornea is slightly hazy, the pupil somewhat dilated; the nerve shows glaucomatous excavation. The field is somewhat limited and the tension is increased. There is some circumcorneal injection, with moderate pain, which, however, is not constant. The vision = 20/LXX. The other eye is normal and emmetropic. Iridectomy was done under ether. The pain was relieved and the tension restored to the normal, but no other effect was produced.

This was one of two cases of glaucoma where the cornea was penetrated, in doing the iridectomy, with great difficulty.

Case VIII.—Hannah W., aged sixty-five years, was awakened in the morning, about three months since, with a severe pain in the left eye; there was also some pain in the right eye. There was failure of sight in both eyes, but more so in the left. On entering the hospital the vision of the left eye was = 20/C. The right eye was = 20/XXX. Both eyes were hypermetropic. The left had been painful since first being attacked. The anterior chamber was shallow and the pupil was somewhat dilated and sluggish. There was incipient cataract. The optic nerve showed signs of atrophy. There were flame-shaped hemorrhages in the retina. There was concentric limitation of both visual fields. Neither nerve showed glaucomatous excavation. The tension in the left eye was much increased, the right less so. On June 16th sclerotomy was done on the left eye. It was feared that an iridectomy might induce an intra-ocular hemorrhage. After withdrawing the narrow cataract knife, everything was as usual for a few seconds, when suddenly the anterior chamber was obliterated, and the iris prolapsed at either angle of the incision. These prolapses were removed by the scissors. Intra-ocular hemorrhage was the natural explanation of this phenomenon. There was now only weak perception of light. The operation resulted in quieting the pain and reducing the tension to the normal. Ten days subsequently there was pain in both eyes, and a one-grain solution of eserine was used in each four times a day. This pain continued for one week. After its subsidence the patient was sent home, but was directed to report at the daily clinics. Twelve days afterward (July 19, 1891) there was slight increase of tension and a little pain. On December 3d returned. She has had occasional pains in both eyes, but it has been relieved by a one per cent. solution of cocaine. The vision of the right eye = 20/XXX, that of the left is equal to counting fingers at six inches. April 25, 1891, the right eye is painful and has increased tension. A one-grain solution of eserine quickly relieved the pain and increased tension. During the last six months the increased tension and the pain have been kept down by the eserine. The left eye has now no perception of light.

Case IX.—Frank L. P., aged thirty-two years, applied for treatment

November 1, 1891, stating that for one year he had had dimness of vision in the right eye. There was some pain and a feeling of soreness in the eye when excessively used. The vision = 12/cc, with —1.50 D. The vision of the left = 20/xl, with the same correction. A posterior polar cataract in the right eye caused a scotoma of from 10° to 20° in diameter. The field was concentrically limited to from 45° to 80°. The iris was sluggish; the tension was increased. A one-grain solution of eserine was used three times a day. Oleate of mercury was used with a view to constitutional effects. On November 14th the tension was normal and the patient was discharged. December 5th, the tension was increased and there was some pain, but the vision = 20/c. Paracentesis of the cornea was done with temporary improvement. By the 15th the symptoms had disappeared. In a few days, however, there was increased tension and pain, and an iridectomy was done. In ten days all the symptoms had again disappeared. On the 29th there was some intolerance of light, with conjunctival injection, increased tension and some pain. Eserine was instilled three times daily, with hypodermic injections of pilocarpine. The latter proving inoperative, salicylate of sodium was administered in sufficient doses to cause free diaphoresis. January 27th, all symptoms relieved. On May 29th there was pain and augmented tension in the *left* eye, which had existed for three weeks. Iridectomy was done at once, and completely relieved the symptoms. Since this date he has returned, with increased tension in the right eye and some pain, which has been relieved by eserine.

Case X.—Miss H., aged thirty-two years, applied to me on September 19, 1890. Right cornea so opaque as to only allow of perception of light. The projection showed perception of light 15° on the nasal side, and 60° on the opposite side. There was some circumcorneal injection. In the upper portion of the iris, between the pupil and the periphery, was a small, circular opening (coloboma). The tension was slightly increased, and there was some pain. During two weeks a two-grain solution of eserine was instilled from two to six times daily. The tension became normal or slightly increased. Paracentesis of the cornea was then done with temporary benefit. After one month a sclerotomy was done, which lowered the tension to the normal for three weeks. The cornea had cleared sufficiently for the patient to count fingers at sixteen inches. The nerve was now visible, and found to show glaucomatous excavation. After three weeks the tension was increased, and eserine sufficed to reduce it to the normal, although it required to be used five or six times daily. Six weeks from the performance of the sclerotomy, iridectomy was done. Since this time there has been only occasionally an increased tension, when eserine has reduced it to the normal. She then returned to her avocation of school-teaching, which she has continued to the present. I saw her in February, 1891, and the vision = 20 xxx —. It seems to the writer very infrequent for the vision to increase from perception of light to 20 xxx — in a case of chronic inflammatory glaucoma.

Case XI.—N. W. A., aged fifty-five years, applied to me on May 18, 1891. He had been rheumatic for several months. During six weeks he had had glaucomatous symptoms in the left eye. The eyeball showed con-

siderable circumcorneal injection, with moderate pain and greatly augmented tension. Iridectomy was done at once. Eserine was used. On the 23d the tension was normal, the injection of the eyeball much diminished, and the pain had disappeared. On entering the hospital there was only perception of light on the nasal side, and on September 2d he could count fingers at six feet on the nasal side. The vision of the right eye = 20 xx'. On September 15th the tension was increased in the *right* eye. Eserine was ordered for both eyes.

October 24. Tension normal in both eyes, and vision perfect in the right eye; eserine still used in both eyes. The optic discs resemble those of glaucoma in the atrophic appearances, with the atrophic ring of glaucoma, but there is no abrupt peripheral excavation, except in the left, there are a few bent vessels. The patient is still under observation, and occasionally requires eserine to relieve pain and increased tension.

Case XII.—Mrs. M. R., aged sixty years, has had periodic pains in both eyes since three months; the right eye becoming first affected, and accompanied by periodic obscuration of vision. The nerves look atrophic, but not especially glaucomatous. The tension is increased in both eyes. The fields are somewhat limited. The vision of the right = 14/cc, and of the left = 20/lxx.

February 3. A sclerotomy was done on the right eye. Eserine was used.

14*th*. Tension normal; no pain.

18*th*. Sclerotomy was done on the left eye.

March 4. Vision of the right eye = 20/c; of the left eye = 20/lxx.

11*th*. Pain and increased tension in the left eye, which soon gave way to eserine.

April 8. Pain and increased tension in the left eye, and an iridectomy was at once done, which completely relieved the symptoms. The vision in the right eye = 20/c, and in the left = 20/cc, whereas, on entering, that of the right eye = 14/cc, and of the left = 20/lxx.

Case XIII.—Mrs. S. A. G., aged sixty-four years, was admitted to the hospital on May 15, 1884, with severe pain in the right eye, which had been constant since three weeks. The left eye, more recently, had become painful. The sight was rapidly lowering. The pupil of the right eye was widely dilated and oval. Discs of both eyes were atrophic, but had few glaucomatous characteristics. Both eyeballs were injected. The vision of the right eye allowed perception of large objects; of the left, counted fingers at three inches on the nasal side. Iridectomy was done on both eyes on the day of admission. Eight days afterward the tension was normal in the right eye, but increased in the left eye. There was no perception of light in the left, but the right eye counted fingers at two feet. There were hemorrhages into the anterior chamber of each eye. On the 29th the left eye counted fingers at fifteen feet, and the right at six inches. Discharged June 23d.

Dr. Reed Burns, of Honesdale, Pa., who referred her to me, writes that the vision of the left eye = 6/cc; and again, on July 16th, that the left eye is doing well, but that the right is painful and becoming cataractous.

The patient returned on April 3, 1885, with the right pupil occluded,

and calcareous changes in the cornea, with a red and painful globe. The left lens was becoming cataractous. The right eyeball was at once enucleated. The cataract in the left was not thought to be due to the iridectomy.

Case XIV.—Washington L., aged forty-six years. Ten years since he received a wound in the left eye from a bit of iron, which necessitated enucleation of the globe. Eight months ago the right eye exhibited symptoms of glaucoma. On entering the hospital the tension of the eyeball was increased, and the nerve showed glaucomatous cupping. Vision = 5/cc. Eserine was used with temporary benefit, but one week after admission it was found necessary to do an iridectomy. Eserine was still continued. In one week the tension was normal, there was no more pain, the redness had nearly disappeared from the eyeball, and vision = 20/cc.

Case XV.—Maggie W., aged twenty-two years. This patient has had trachoma in both eyes for three years, and during the last month there has been great pain in the right eye and temple. The cornea is hazy and anæsthetic, the anterior chamber is shallow, and the eyeball is too hard. Iridectomy was at once done, eserine being used. The tension was soon reduced to the normal, and the pain was relieved. The patient counted fingers at one foot, whereas before the operation she counted fingers at four feet.

Case XVI.—Joseph D., aged forty-three years, has had gradual loss of vision since six months, without pain. The right eye was first affected, and is now the worse of the two. Both discs are deeply cupped. The pupils are moderately dilated, and the anterior chambers are shallow. The right eye has faint perception of light, and the left counts fingers at two feet. The field is limited, and extends from 30° to 45° around the posterior pole. The tension is increased in each eye. A one-grain solution of eserine was used three times daily. One week after entering the hospital, Dr. Hepburn did a sclerotomy on the left eye, eserine being used in both eyes. Fourteen days afterward the tension was normal in each eye. On the next day a sclerotomy was done on the right eye. On September 6th (four days after the operation in the right eye) eserine was used in both eyes. Perception of light in right eye was much improved. In the left eye the *field is nearly normal*, and vision = 9/cc.

September 16. The right eye counted fingers at eighteen inches.

30th. There was increased tension in the left eye, and eserine was used.

October 22. She was discharged with vision improved, but the field in the left had diminished to 70° by 20°, being about three times the original size.

Case XVII.—Matthew R., aged fifty-four years, has had symptoms of glaucoma simplex dating back four years. There has been no pain, but occasionally there has been a halo about the gaslight. The fields are limited to about 20° in each eye. The tension was slightly increased, and pupils moderately dilated. The discs show glaucomatous excavation, and appear atrophic. Vision = 20/xl. Iridectomy was done on both eyes at one sitting. Tension was reduced to normal, but there was no change in vision. Five years afterward there was no change.

Case XVIII.—Mrs. T., aged fifty-seven years, applied for treatment on

July 23, 1889. Six months since she had a severe pain in the right eye and temple, lasting a day or two. Since that time she has had pain in the eye most of the time, except occasional intervals of four or five days. One month since she noticed that the sight was lost and there was no perception of light. There was increased tension and glaucomatous excavation of the nerve. In the left eye vision = 20/xx, tension was slightly increased, and the nerve seemed to be physiologically excavated. Eserine was used in the right eye six times daily, and in two days the pupil was much contracted, and the tension reduced to the normal. Did not return.

Case XIX.—Mrs. B., aged forty-two years, was first seen January 29, 1890. At the age of fourteen years a door fell upon her head, wounding the left eye, and causing hemorrhage from the nose and ears. She has seen badly out of this eye ever since, but worse within two years. Since six months she has had only perception of light. There are numerous punctate opacities of the cornea; the pupil is dilated, but responds slightly to light; there are lenticular opacities and floating bodies in the vitreous. The projection is imperfect; the nerve is so atrophic as to be indistinctly located, but there is no excavation. The tension is slightly increased. The eye feels uncomfortable, but not positively painful. Eserine was used three times a day. The pupil promptly contracted, and the tension soon became normal. The eserine caused some pain, and was discontinued for a short time.

November 20, 1891. The patient again presented herself, saying that she had used the eserine daily ever since the last record. The eye showed normal tension, was not painful, and was doing well. On December 2, 1891, the tension was increased, but the eye was in fairly good condition. Eserine has been used occasionally up to the present time, and the eye is comfortable.

Case XX.—Mrs. W. C., aged sixty years. Eight years since she had rheumatism, accompanied by intense pain in the right eye. In a few days the sight of this eye was abolished. Since that time there have been occasional attacks of pain. Five years ago the sight of the left eye was foggy, but there was no pain. Three weeks ago it began to pain her, and the sight grew worse. The pupil is dilated, and the anterior chamber is shallow; there is no sight. The right eye has a scleral staphyloma, with a similar condition otherwise as in the left. Sclerotomy was at once done on the right eye, and iridectomy on the left. In three weeks the patient was discharged, having no pain, and with normal tension.

In all, there were twenty cases and thirty-two eyes. Of these there were four cases of *acute inflammatory glaucoma*, one eye only being affected. Of *chronic inflammatory glaucoma* there were twelve cases and seventeen eyes. Of *glaucoma simplex* there were two cases and four eyes. There was one case and one eye with *hemorrhagic glaucoma*. There were four cases of *glaucoma absolutum*, with five eyes affected.

Of the cases of *acute inflammatory glaucoma*, Case I. was completely relieved by iridectomy; the same of Case II. Case III. was treated by eserine before and after sclerotomy, with vision improved from 5/cc to 20 LXX. Case IV. was relieved by eserine, leeches, and pilocarpine injections. Vision not tested.

Of the cases of *chronic inflammatory glaucoma*, the right eye of Case V. was completely relieved by iridectomy (vision = 20 XXX, from counting fingers). The glaucoma was kept in abeyance for two years by occasional paracenteses of the cornea. In Case VI. iridectomy failed to relieve tension in each eye, and sclerotomy succeeded. In Case VII. iridectomy relieved pain and tension, but did not affect the sight. The cornea was punctured by the keratome with great difficulty, although the instrument was in perfect order. In Case VIII., right eye, pain and increased tension were relieved by eserine for more than a year; vision = 20 XXX from the first to the present time. In Case IX. both eyes were affected, on which paracentesis, sclerotomy, and iridectomy were done; eserine was used most of the time, even after the iridectomy, the last treatment being pilocarpine and salicylate of soda. In Case X. the patient was treated with benefit by eserine, paracentesis, sclerotomy, and iridectomy. Eserine was found to be of service even after the performance of iridectomy. In Case XI., left eye, the sight was improved by iridectomy and eserine, from perception of light to counting fingers at six feet. In Case XII. neither nerve was excavated, but both were atrophic; sclerotomy permanently benefited the right eye, but iridectomy was needed in the left. In Case XIII. iridectomy was of temporary benefit to both eyes, but ultimately the left eye was enucleated, and the right became cataractous. In Case XIV. the left eye was relieved by iridectomy and eserine. In Case XV. iridectomy relieved tension but lowered vision.

In Case XVI., of *glaucoma simplex*, sclerotomy and eserine relieved tension in each eye, improved the right eye from perception of light to counting fingers at eighteen inches, and the left from fingers at two feet to 9/cc. In Case XVII. iridectomy relieved tension, but had no effect on the vision.

In *glaucoma absolutum*, in the right eye of Case XVIII., the augmented tension was relieved by eserine. In Case XIX., in the left eye, eserine has relieved augmented tension for two years, and so far has rendered an operation unnecessary. In Case XX.

increased tension in the right eye, with some pain, has been relieved by sclerotomy, and the left eye has been relieved by iridectomy. In the left eye of Case V. iridectomy induced intra-ocular hemorrhage, which necessitated enucleation.

Eserine was usually used in solutions of one grain to the ounce, but sometimes in two-grain solutions, and, in some cases, as often as six times daily, without, in a single instance, causing iritis, and only occasionally inducing pain. It has been found useful in acute inflammatory glaucoma, and in most of the cases of chronic inflammatory glaucoma, even before, during, or after operation.

In *glaucoma absolutum* it has succeeded often in relieving pain and augmented tension, and in indefinitely warding off operation.

Paracentesis of the cornea has met with some success in temporarily relieving pain or increased tension in all forms of glaucoma, and seems to be free from danger.

XXXII. Our Refraction Cases.

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I HAVE in my office some very full notes of the lectures by Prof. Rush, that were delivered in the city of Philadelphia in 1797, and in them I find only ten lines on vision, while at the present day volumes are devoted to the study of the eye and its varying conditions.

To attempt to lecture on the subject is not my purpose, yet it seems to me that the various conditions and changes suggested by our cases of refraction, with the long train of symptoms referred to the eye, and their relation to eye-strain, and the many reflex symptoms that may be referred to this delicate organ, with all its complex and exact mechanism, is well worth the thoughts of our medical men.

Refraction work, in my mind, ranks next to surgery in the hands of an oculist, both in the relief afforded and in its brilliant results, but though only ranking second in importance, yet in numbers it far outsteps all others in the oculist's work. We will find fully three-fourths of his cases require the careful examination by the

usual tests. Refraction work now reaches that importance in the relief of headache and perhaps other affections, that I think I do not exaggerate when I quote the following words from the *Medical News* of December 12, 1891, that in the examination of refraction cases: "It has the misfortune to depend for its promulgation and practical application upon the specialist, and almost upon the specialist of a specialty, and this in a profession and in an epoch in which it is fashionable to sneer at specialism and at the specialist who dares to plead for the truth he knows—and that at first, at least, only he can know."

It is with a true appreciation of the importance of this work, its careful methods, and the relief obtained in the large majority of cases, that I have ventured to come before the Society with these thoughts and suggestions.

The study of over one thousand cases, comparing the various degrees of refraction, as I find them, is the object of this paper, and not to weary you with long tables of statistics—histories or symptoms that have already been published by other writers. All of these cases were carefully examined by the usual tests, as I shall describe, and a large majority of them when the accommodation was entirely paralyzed by atropine—a test which, in my mind, is the only critical one—but at the same time I think this test should not be used unless absolutely necessary, when the other tests will not agree in the examination, or when there is any evidence of spasm of the accommodation or abnormal accommodative tension. Our objective tests are now so perfect and exact that we are not justified in placing the patient in a condition of partial blindness unless absolutely necessary. Yet in some cases it is remarkable how quickly headache and other symptoms disappear by the proper use of the drug.

As regards the usual failure of accommodation due to age, I find 242 cases—a little more than one-fifth—are over the age of forty years, a time when presbyopia, or old-age sight, is supposed to begin, but this condition of accommodation has been left out in the estimation of the refraction errors, and the cases here illustrated refer to the actual refractive condition of the eyeball. Nor shall I dwell upon the cases in which any pathological conditions were found to exist, except so far as the refraction may show that this condition was due in part to the excessive use of the eyes.

I have divided these cases into the following classes:

	CASES.
Hyperopia	351
Simple hyperopic astigmatism	192
Compound " "	165
" myopic "	90
Myopia	75
Emmetropia	54
Mixed astigmatism	49
Simple myopic astigmatism	26
Total	1002

Giving a total of 2004 eyes examined, of which I found that in 774 cases the refraction error was the same in each eye, and 174 cases in which the refraction error was different, or the condition of anisometropia, the largest per cent. being in the cases of mixed astigmatism, where we have 29 in a total of 49 cases examined, and the lowest per cent. in that of simple hyperopia.

In all statistics of refraction the hyperopic eye stands foremost in numbers, because it is undoubtedly the best eye for all purposes when this refractive error is of a low degree, and so in these cases I find fully 30 per cent. with the shortened eyeball, and yet only 43 of the whole number, or 13 per cent., have vision equals 1, or even better, as I have the past two years used the letters of the 20/xv line as my standard.

I cannot consider the hyperopic eye as the normal one—the point I shall discuss under emmetropia—but still it is, when normal and of low degree, adapted for very perfect vision; nor can I agree with the suggestion that we shall divide our refraction cases into two great divisions—as hypermetropia and myopia. Certainly a strong argument against this is when the hyperopia becomes of a high degree, otherwise the media normal. Then there seems to be a deficiency in the retinal elements, and the vision falls below the standard in each eye. Again, we find this eye will be amblyopic, without any visible lesions, and in this series I find 10 per cent. in which one eye was so. Again, this eye, when of medium degree, as about 2 D., must at times turn inward to assist the action of the ciliary muscle by its relation to that of the internal rectus, and frequently associated with amblyopia, and we find 7 per cent. with convergent concomitant squint, with only two cases divergent. In this eye we also find the condition of abnormal accommodative tension, or the clonic spasm, here numbering 11 cases, or 3 per cent. of the total.

A large per cent. of the cases tested showed a decided want of balance in the powers of the straight muscle, as 30 per cent. of all the cases tested showed a weakness of the internus compared to that of the externus.

As regards the age at which hyperopes will usually seek the oculist, I find in my cases more than two-thirds between fifteen and forty years, showing that in simple hyperopia they will need glasses earlier than the emmetrope.

In examination of these cases I have divided them into two classes, those in which the vision was normal, and yet the hyperopia was manifest, numbering 235 cases, and those in which hyperopia was absolute; that is, the vision was less than normal, and was improved with convex glasses, numbering 116 cases. In all these cases the total hypermetropia was estimated, and the latent was found to diminish with advancing age.

In ordering glasses for hyperopia, I have followed this rule; give them the strongest convex glass they would accept for distant vision when the accommodation was active. One interesting fact in reference to the study of these cases is the small number in which the refraction of the one eye was different from that of the other, as I find only 27 cases, less than 10 per cent., and in these, when the refraction of the one eye was hyperopic, that of the other was only complicated by simple astigmatism of the same kind.

As regards the degree of hyperopia, the age did not seem to have any effect, as some of the highest were youngest in age, and so it has varied on all the many divisions of the dioptre, from that of one-quarter to six; the largest number I found between 1 D. to 3 D. In the younger persons I found that the manifest hyperopia was not quite equal to one-half of the total, as shown by the objective tests.

Our next largest number of cases, showing about 20 per cent. of all, or numbering 192, present simple hyperopic astigmatism—one meridian being emmetropic and the other hyperopic, with a greater radius of curvature of the cornea in the horizontal meridian.

Of the entire number, nearly three-fourths sought my advice between the ages of ten and thirty years—the largest number being about twenty, showing at this age the lens begins to lose its power to compensate for the astigmatism of the cornea. Now the direction of the axis of the cylindric glass presents many features, as

we find 84, or nearly one-half, at 90, or with the rule; 19 at 180 or against the rule; 29 with the axes inclined toward the temple, and only 12 toward the nose, while of the balance I find 44 with this astigmatism in the one eye, and in the other various conditions of refraction from emmetropia to mixed astigmatism.

I also note that in 5 of these cases we have the axes at the same degree in each eye, not symmetrical, but at 110 degrees or 140 degrees, etc., in each eye. These cases are very interesting from the peculiar effect that is apt to be produced in the shape of square objects. We find, as I think, a prismatic effect on the rays of light, so that the object will appear smaller on one end, or shorter above or below. This I have corrected by placing the axes as nearly vertical as possible, until the object has the proper shape. It was proposed to call this condition binocular astigmatism, but as I find the same phenomenon occurs when only one eye is used, I think it is due to a prismatic effect of the glasses.

As regards the power of the straight muscles in these cases, I find records of 37 with weakness of the interni, with four operations on the externi, and relief in every case, and two in which prisms were ordered with satisfactory results. Of the above operative cases three had a constant diplopia of various degrees.

If we take the same condition of corneal curve as above, and complicate it with a shortening of the optic axis, then we have our third largest class, that of compound hyperopic astigmatism, numbering 165 cases in all, and making a grand total of 608, or about 60 per cent. of the total number, showing the condition of reduced refraction in one or both meridians of the eye.

Studying these cases, I find 103 where the axes were symmetrical in each eye. Of this number, 44 presented their axes with the rule, while in the remainder the axes were inclined toward the temple or the nose, or against the rule, at 180 degrees. Of the remaining 65 cases, I found anisometropia, the complication being generally simple hyperopia, with 5 cases of convergent squint.

In this connection I would like to mention one case that I was able to watch and test until I saw his refraction changed to a condition of mixed astigmatism at the last examination. Presenting himself when a boy, in 1879, under atropine his vision was as follows: V = 20 xv with + 1 30, ⌒ + 1/40 cyl. ax. toward nose. In 1881 the same; in 1887 his hyperopia has disappeared, and now

V = 20 XV, with —1 72 ⌒ + 1 20 cyl. ax. same, thus showing a slow extension of the optic axis.

Passing now to the next great division of refraction, possibly a result of increased work at the region of the near point, and resulting in elongation of the optic axis, comes that of myopia, and as it is said that we pass from the first division to that of the second by the paths of astigmatism, I find our next largest number of cases compound myopic astigmatism.

But let us first look at the tables of myopia alone, of which we find only 75 cases. Although one-third of these present some complications, I cannot but think in fully one-half, or 38, with vision equal to 20/XV, the refractive condition was congenital, and had not passed along the path of astigmatism (as they were free from it) from hyperopes to myopes.

Let us see what these cases show us. In myopia I find the ages range from nine, the youngest, with a myopia of 2 D., to sixty-four, the oldest, with a myopia of the same degree; though in this last case I found incipient cataracts in each eye, reducing vision to 20/LXX, but no other complication.

About one-half of these myopes were females, and from their histories complained mostly of poor distant vision rather than that of eye-strain. But I found many of these with some other troubles in one eye, either right or left, and seven with one eye astigmatic and the other myopic.

I did not find much insufficiency of the straight muscles, there being only three in which the interni were weak, and in the same number one eye was found to be amblyopic—if we except those whose distant vision was found to be less than 20 LXX.

Three cases had detachment of the retina, and in only two staphyloma were noted. As regards the standard of vision, thirty-eight, or more than one-half, equalled 20 XX or better, while the remainder was about equally distributed between 20 XXX and 20 LXX.

As regards the degree of myopia, more than one-half had less than 3 D. The worst case showed a myopia of 20 D., the far point being only at two inches, and the lowest degree being one-fourth dioptre.

These thoughts bring us to the consideration of what is the best condition of myopia, and I am inclined to think, as I have noted my cases, that those of about 3 D. were the best, provided that there was no evidence of any posterior sclero-choroiditis with

staphyloma. These cases will have perfect vision both near and far with their glasses, and will be free from the annoyance of presbyopia, as in old age they can readily see at their far point of twelve inches.

Passing now to the myopes complicated with astigmatism, we may consider the simple with the compound, with 90 cases of compound myopic astigmatism, and 26 cases of the simple variety. I find the ages of these cases about the same as the others. But what is noticeable is the large number of anisometropes, as fully one-third of each variety presents some other condition of refraction in one eye varying from that of emmetropia to that of other conditions of astigmatism. I do not find any cases of squint, and very few showed any insufficiency of the extrinsic muscles.

As regards the placing of the axes, in less than one-half it was at 180 degrees, showing the greatest curve of the cornea in the vertical meridian, though in the largest number I found the axes symmetrical, yet I was somewhat surprised to note that in the majority of these cases the axes did not tend principally toward that of the rule or horizontal.

I wish here to mention one case, that was reported to the New York Academy of Medicine, which presented the most surprising reflex symptoms, with tonic spasm of the ciliary muscles that was not controlled until atropine was used for three months, and yet the refractive condition was only simple myopic astigmatism of one-fourth dioptre, with the axis in the R. E. at 170 degrees, and in the L. E. at 80 degrees; certainly a condition that might produce excessive irritation of the nervous system.

Of all these cases that applied to me for relief of their refractive troubles, we find 54 cases, or $5\frac{4}{10}$ per cent., classed as emmetropic, and about 30 per cent. as hyperopic, which brings to our minds the question, What is the emmetropic eye? A question that admits of but one answer in a scientific point of view—*i. e.*, the eye whose retina is at the focal point of the dioptric apparatus when the eye is in a state of rest.

This question and answer can only be decided in one way, and that by complete paralysis of the accommodation, with normal vision, or 20/XV, and the rejection of all convex glasses as low as 0.25 D. I cannot yet concede the possibility of a degree of refraction as 0.12 D. or $\frac{1}{8}$ D. A glass whose focal distance lies at over twenty feet from its nodal point will only send the rays onward

almost parallel. So I cannot understand their usefulness, while we must have a limit somewhere.

I do not think, because from the examination of a large number of eyes, we find the majority, or even 90 per cent., as Van Fleet admits, to be hyperopic, that we must consider this as the normal eye. We do know that a certain per cent. of adult persons, according to Roosa's examination, who never had any asthenopic symptoms, are found to have vision equal to 20/XV, and reject all glasses. Nor can I consent to the theory that those persons are simply passing from a condition of hyperopia to that of myopia. Also, in my own cases of emmetropia, they had all passed the age of twenty-eight years, and many were found to be emmetropic after passing the age of forty, and I cannot believe they had stopped on the road to myopia. Consequently, I must believe that there are emmetropic eyes according to the above definition, and that they remain so during life. We must admit this, even though the large proportion of human eyes are emmetropic, the case being the same in the animal eye.

But if we ask, What is the best condition of refraction for the human race, as regards distant and near vision? I must answer that I believe the hyperopic eye of less than 0.50 D. is the best, as now the slight activity of the accommodation in distant vision gives us a very complete, clear picture upon the retina, as the rays of light are most perfectly and beautifully adjusted to a focus as they pass through the dioptric apparatus.

A very interesting class of cases—the last of this series—are those of mixed astigmatism, numbering 49 of the total. These are due either to a decided difference in the radius of curvature of the cornea, so that one meridian will be hyperopic and the other myopic, or else we have a simple astigmatism in reference to the cornea, with the same change in the optic axis as exists in simple refraction.

Only 20 of these cases presented the same condition in each eye, leaving 29 that had various conditions of refraction in the other eye—mostly simple astigmatism. There were 23 eyes in which myopia predominated, the axis being in the region of 180 degrees, and 28 eyes in which hypermetropia predominated, with the axis in the region of the vertical meridian. But though I find the majority according to the rule, yet the axis was at almost any position on the arc.

Examination.—In all these cases I have depended first, upon the careful test with the trial glasses, and the test letters at twenty feet But in case the vision is less than normal, I have then supplemented my trial by an examination with the objective methods, then returning to the trial glasses I have generally found my results very satisfactory. Now, in reference to the objective examinations there are many methods advised in the text-books, but most of them are only confirmatory. It seems to me that there are only three methods that are at all accurate, and that can be relied upon. At the same time each one requires a large amount of constant practice to make them of practical value. Of these three, I would at first depend upon the examination with the ophthalmoscope—an instrument that I think is very exact in all its results, particularly so when the error of refraction is at all well marked, not only in all cases where the error is due to a change in the length of the optic axis, but also when complicated with corneal or lenticular astigmatism.

Next to the ophthalmoscope I find retinoscopy with the plane mirror very exact in its results, as showing the axis of the astigmatism, and the degree of refraction. In my hands it has only failed when the true refraction has been concealed by spasm of the accommodation.

Lastly, we have an instrument at the present day new to the oculist's office, but one that I consider of great importance in the estimation of the degree and axis of astigmatism—the ophthalmometer of Javal; since I have used this instrument, I have been very much pleased with its measurements, showing the changes in the curvature of the cornea, and making the estimation of the different meridians very exact.

I do not believe that we are yet sufficiently educated, if I may so speak, in the use of this instrument, to prove its full value, but I am inclined to believe, with Swan Burnett, that we can find its markings, in a large majority of cases, within one-fourth of a dioptre of the true curvature of the cornea, even though the time may come when the oculist will see the necessity of correcting his cases of refraction to that of one-eighth of a dioptre—certainly an extremely small error, and one I do not yet believe in, but when we find some of our most interesting cases of asthenopia are due to an error of only one-fourth of a dioptre, there may be other cases of

less than that. Now, can this be demonstrated by the ophthalmometer?

It is true that this instrument will not tell us whether the error be myopic or hyperopic, or whether the curve be normal. But having once correctly estimated the amount of astigmatism as shown, we may easily decide the condition of refraction by the ophthalmoscope or retinoscopy.

Combining these four methods, and finding all their markings to agree, one confirming the other, we may feel satisfied that the glasses so ordered are correct, and if the asthenopia is alone due to the refraction, will at once give relief.

In closing, a word as to ordering glasses after our examination is completed. As a standard, I would take a person between twenty and thirty years old. In hypermetropia at that age, the accommodation has fairly good power, and cannot or will not relax sufficiently to admit of full correction of the ametropia, beautiful as that theory may be—so my rule is to order the strongest convex glass that will be accepted with binocular vision at infinity.

In myopia, although I do not think a slight over-correction will cause trouble, and theoretically it should only develop the weak ciliary muscle, yet I always order the weakest concave glass, and if of high degree, we may order weaker glasses for near work.

Now in astigmatism this condition should be carefully estimated—the axis of the cylindric proven true—and then we can decide on the strength of the glass, giving the strongest convex and the weakest concave.

The same rule holds good in cases of mixed astigmatism, when I order the glasses to full correction, as shown by the test. In two cases of this variety, I had to order cross cylinders, as the vision was best with this correction. It has been my experience that in a vast majority of cases they will accept the cylindric glass as found with the test by atropine; at the same time my rule is to give my patients that glass with which the vision is clear and the eyes comfortable, even if at first I must order a glass weaker than that shown by the examination, and then, if necessary, we can order stronger glasses afterward to full and complete correction.

XXXIII. Concerning Muscular Advancement.

By LUCIEN HOWE, M.D.,
BUFFALO.

The methods of advancement of the ocular muscles have been varied so much in their details, that it would be out of place in a paper before an audience not entirely made up of students of ophthalmology to treat all of these modifications separately. At present, therefore, I wish to call attention only to two or three points in this connection. Everyone knows, of course, that this operation for the relief of strabismus consists in loosening from the point of its insertion into the sclerotic, a muscle which is too weak, and bringing it forward to attach it nearer the cornea. The fact that this procedure is, by some operators, avoided when possible, and that when resorted to, the average results are by no means satisfactory, shows that the technique of it has not yet been properly formulated. In this state of uncertainty, therefore, it seems worth while to offer any further suggestions, however simple.

As the first step, I think the opposing muscle should be divided, certainly when the degree of strabismus exceeds two or more lines. As the operation is usually made to correct a divergence which has resulted from too free tenotomy of the internal rectus, the first act is naturally to divide the external rectus. It may seem superfluous to mention this, so general has been the adoption of that plan, but, on the other hand, I know that it is not followed by some operators whose reputation for skill is otherwise unquestioned.

Second, it is of importance to retain a hold on the muscle to be advanced, for if not, this retracts into the surrounding tissue and it is virtually impossible to find it. Various methods have been employed to obviate this difficulty. One of the simplest consists in introducing two or three stitches either in the line of the attachment of the muscle, or at the upper and lower edges at right angles to it, and after the division is made, using these threads for drawing the muscle forward into its place. Theoretically, this is a very attractive method, but practically it necessitates considerable loss of time; and, as a general anæsthetic is frequently necessary in these cases, the operator is too often interrupted by the restlessness or

vomiting of the patient. In order to do away with this, De Wecker long ago proposed a clamp with which the tendon of the muscle could be retained after being once isolated. This simplified the operation, but it was soon found that the clamp was clumsy and that if the patient struggled after it was once introduced, it was sometimes necessary to relax the hold obtained, thus defeating the very object for which it was used. In order to do away with this objection, it seemed advisable to have the clamp made very short and light, in order that having once been fixed in position, it could be left, irrespective of the movements of the patient.

Such a clamp I had made some few years ago, and it has proved so useful at various times that, simple as it is, it seems worth while to call attention to it now. It consists of nothing more than a pair of forceps about an inch long, with crossed branches, the clamp portion about a quarter of an inch long, turned at right angles, and provided with three teeth, which fit corresponding depressions on

the opposite branch. The whole is made as light, and the spring as strong, as possible.

After the tendon is exposed, the smooth blade of the forceps is passed under the muscle and its end firmly clamped, leaving sufficient space between the plates and the globe of the eye to make the section without difficulty. This having been done, the operator can take his own time in dividing the tendon, introducing the stitches, resecting a portion of the muscle if necessary, or, in general, he is able to manipulate the muscles with perfect ease; and if, meanwhile, he is interrupted by the struggles or vomiting of the patient, the clamp is simply left in place, it being so small as to give no inconvenience whatever.

The next point to which I would direct attention is the introduction of the stitches. I have tried different plans, and have gradually come to the conclusion that the best results can be obtained by a modification of the method first advised by Dr. Prince, of Jacksonville, Ill., and called by him the loop suture. It is well known that he introduces one stitch parallel to the line of the incision in the conjunctiva—that is, tangent to the cornea and almost touching it—

and that the two ends of this thread are then tied together. Next, a thread is armed with two needles, each being passed through the muscle from within outward, transfixing that and the conjunctiva also, and the two ends of the stitch are tied, after one end has passed through the loop near the cornea. The muscle is in that way brought forward. If it is found that the correction is too great, the stitch can be loosened, or if the correction is not sufficient, the muscle is drawn a corresponding distance further forward by tying the stitch tighter.

Theoretically, this is almost the ideal operation, but practically there are two great objections to it. In the first place, the muscle is apt to slip upward or downward as the loop stretches in various directions. Thus it is impossible to foretell with exactness whether the muscle will not attach itself a little too far upward or downward on the globe, giving subsequently a proportional displacement. The second disadvantage of this method is in the puckering of the conjunctiva, not infrequently an unsightly projection being left over the point where the muscle is attached to the globe. I have found that both these difficulties could be obviated by arranging the stitches differently. First a stitch is introduced at the same place and in the same manner as he suggested, and then, being tied in the centre at the point nearest the cornea, the needle is again placed under the conjunctiva at that point and this end of the thread is tied with the other end of the same suture. In other words, the one loop is then divided into two and it forms what might be called a "B-shaped" loop. Second, in order to draw the muscle forward, two stitches are used. One passes from the upper edge of the muscle from within outward, transfixing the muscle and corresponding part of the conjunctiva, and being passed through the upper part of the opening in the B-shaped loop. The lower stitch is passed in the same way through the lower edge of the muscle and then through the lower portion of the B-shaped loop. Then, by tying the corresponding ends of these two stitches above and below, the muscle is brought securely into the position which it should occupy, neither too far above nor below. Moreover, as it then rests closely upon the sclerotic, there is either no projection of the conjunctiva, or so small a fold as may be easily removed.

In spite of all precautions, it must be admitted that the operation does not give uniformly good results. I have been convinced of

this both by a considerable series of cases in my own private practice, in which different methods have been tried, and especially by studying the results reached by some of the most enthusiastic advocates of the operation. In selected cases, of course, we all obtain a large proportion of beautiful results, but so long as in the average there is so much to be desired, any improvement in the operative technique, however slight, seems worthy of record.

XXXIV. Fibroid Disease of the Heart.

By ALFRED L. LOOMIS, M.D.,
NEW YORK.

Under the title of "Fibroid Disease of the Heart," Dr. Hilton Fagge has described a condition in which the cardiac walls are the seat of more or less extensive fibroid change. Similar anatomical changes have also been described as lesions of chronic interstitial myocarditis, and it has generally been supposed that the myocarditis, which has been regarded as the starting-point of such fibroid changes, is secondary to inflammations of the endocardium and pericardium. My studies have led me quite extensively into this subject during the past two years, and in no instance have I been able to find any evidence that the fibroid process in the cardiac walls was the result of the extension of an endo- or pericardial inflammation. In fact, the appearances presented in my cases have been opposed to the generally accepted views on this subject. As a text to what I desire to say at this time, I will give a brief report of two cases of cardiac fibrosis which have come under my observation during the past two years:

Case I.—Mr. H., aged fifty-six years, of temperate habits, with a strong hereditary tendency to fibrosis, was taken with acute influenza early in December, 1889. During the attack, which was not unusually severe, he seemed several times in imminent danger of dying from what was regarded as sudden heart-failure. It was during one of these paroxysms that I first saw him. His countenance was pale and anxious; there was no cyanosis; his respirations were 40 per minute and irregular, assuming at times somewhat of a "Cheyne-Stokes" character; his pulse was from 120 to 140 per minute, feeble, irregular, and intermitting; his radial arteries were hard and unyielding; his rectal temperature 100° F.—it never reached 101° F. during his illness. A physical examination revealed a slight catarrh of the medium-

sized bronchial tubes. The apex-beat of the heart was feeble and diffused, but could be distinctly felt an inch to the left of the nipple line. The heart-sounds varied in intensity and rhythm; at times they were distinct, resembling in character the fœtal heart-sounds, and then gradually they would become almost inaudible. The patient would be seized with great restlessness and jactitation, when immediately the heart-sounds would become distinct and the jactitation would cease for a short period. At times a loud systolic murmur was audible, which was confined to the præcordial area. The first sound was not synchronous with the radial pulse. The urine was scanty and of high specific gravity, but contained neither albumin nor casts. Alcoholic and direct cardiac stimulants gave him only temporary relief, and in forty-eight hours he died in attack of cardiac syncope.

At the autopsy the heart was found markedly enlarged, and all its cavities were distended with fluid blood, showing that death had occurred during diastole. The left ventricle was dilated, and its walls thicker and firmer than normal. Small masses of fibrous tissue could be distinctly made out by the naked eye on its cut surface. The pericardium and endocardium presented a normal appearance. Microscopically, the walls of the left ventricle were found to be the seat of extensive fibroid changes. In some places the muscle fibres were surrounded by bands of fibrous tissue, at others small fibrous masses were imbedded in the muscle, and at still other points bands of fully developed fibrous tissue ran along the line of the muscle fibres. No direct fibrous connection could be traced between the fibrous developments in the heart walls and the pericardium or the endocardium. The small branches of the coronary artery adjacent to the fibroid changes presented the characteristic appearances of arterial fibrosis, viz., hypertrophy of the middle coat and thickening of the intima. The kidneys were typical specimens of the earlier stage of renal fibrosis.

Case II.—On the 10th of March, 1891, I was summoned in haste to visit Mr. W., who died a few moments before I reached his residence. His attending physician gave me the following history: Mr. W. was sixty-three years of age, a generous liver, had always been vigorous, having never been ill, except with gouty attacks once or twice a year, for the past ten years. For three or four months preceding his death his friends had noticed that he was aging very rapidly. During the past year he had frequently complained of shortness of breath on exertion, and once or twice had slight attacks of vertigo, lasting a few moments. About a week before his death, he had visited his physician for the relief of dyspeptic symptoms. At the time of his visit his pulse was frequent, irregular, and at times intermitting; but as no abnormal cardiac sounds were heard, his cardiac symptoms were referred to his stomach, and he was placed on a restricted diet, with rhubarb and soda night and morning. He was not seen again by his physician. His family stated that soon after a hearty luncheon he began to complain of pain in the epigastrium, and a sense of faintness. He immediately went to his library, one flight above his dining-room, lay down on a lounge, and soon called for help, but before any of his family reached him he ceased to breathe.

At the autopsy the left ventricle was found greatly dilated and distended

with fluid blood: its walls were thinner than normal, but firm and resistant. At the apex there was a dense fibrous plate, which entirely replaced the cardiac muscle. The mitral opening was somewhat dilated, but the valves competent. Microscopically, the walls of the left ventricle everywhere showed extensive fibroid changes. In some places large areas were occupied by plates of firm fibroid tissue, and, although sections were examined from every portion of the left ventricular wall and septum, in every section an abnormal amount of connective tissue was found. There was a general fibroid thickening of the smaller branches of the coronary artery, and at some points the arterioles were obliterated.

In the first of these cases the fibroid changes were far less extensive than in the second, and had not an attack of influenza caused some defect in the nerve-supply of the heart, undoubtedly the patient would have lived on comfortably for some time. Such cases require a pneumonia, or some acute affection, to make evident the cardiac weakness produced by the fibroid changes; and the dying of heart-failure in pneumonia, of which we hear so much, undoubtedly, in many instances, has cardiac fibrosis as the real cause of the heart-failure. In both of these cases the fibroid changes were confined to the walls of the left ventricle, and occupied spaces made by the loss of the muscle substance. In most instances there was no sharply defined line between the fibrous tissue and the muscle, but they shaded imperceptibly into each other. The margin of the patches was quite irregular, and the adjoining muscle-bundles were more or less broken up and separated from one another by the encroachment of the fibrous tissue. In the midst of some of the fibrous patches isolated and much atrophied muscular fibres were seen, and all the appearances pointed to a gradual loss of the muscle-substance and its replacement by fibrous tissue. Minute arterial branches could be made out in, or in the neighborhood of, the patches, and these always presented the characteristic changes of arterial fibrosis. In no instance did the fibroid changes in the cardiac walls present any evidence that they were extensions of processes originating in pericardial or endocardial inflammations. While I am not prepared, from these and other similar examinations, to say that fibroid changes in the minute branches of the coronary artery precede, and apparently are the cause of, cardiac fibrosis, still my examinations go far to sustain such an opinion. Pathological histology teaches that fibroid production takes place about injured tissue, and extends from uninjured areas into spaces made by the removal of such elements as have been destroyed. With this as a

fact in the etiology of all fibrosis, we are prepared to claim that anything may be a cause of cardiac fibrosis which leads to injury of the parenchymatous elements of the cardiac muscle, however minute such injury may be. This principle is recognized in all gross forms of necrosis — as infarctions, ulcerations, etc. — and until the contrary is proven, it may fairly be assumed that the same is the case in every degeneration or necrosis, however microscopic.

On this basis, I would propose the following classification of the causes of cardiac fibrosis :

1. All toxic blood elements and trophic nerve influences which tend to prevent or interfere with parenchymatous nutrition.

2. Localized mechanical interference with nutritive supply from changes in the arterioles.

3. Traumatism, either of strain or compression.

In all of these ways molecular necrosis of the parenchymatous elements of the cardiac muscle is obtained, and, whenever necrosis of these elements occurs, fibroid substitution is the result. It is undoubtedly true that the most important class of causes of all fibrosis are those which act directly to diminish the vital forces by which each cell appropriates to itself necessary elements from the blood, and completes the metabolic changes which produce protoplasm, or convert it into tissue waste. This class includes mechanical, chemical, and trophic influences. Tobacco, opium, alcohol, anxiety, mechanical and mental strain, all strike at nutrition in the same way—by lowering tissue vitality. In all of these ways, molecular necrosis of the parenchymatous elements of the heart, and other highly vitalized organs, may take place.

Virchow[1] records eighteen cases of fibroid disease of the heart in which coronary arterial fibrosis existed, and in which actual infarction had not occurred ; but after molecular change in the muscular fibres had occurred from interference with their blood-supply, fibroid processes were set up at the site of the degenerated tissue elements. These fibroid patches he regards as the result of an inflammatory process set up by the disintegrating tissue elements, and he is disposed to regard such fibroid lesion as primarily vascular.

My studies, however, have led me to the opinion that the vas-

[1] Virchow's Archives, 1882, p. 89.

cular changes are as much dependent upon defective nutritive supply as are the interstitial, and that the toxic causes which I have classed as etiological factors in cardiac fibrosis, in most instances act primarily upon the vascular walls, producing the changes which in turn become the secondary cause of parenchymatous molecular necrosis.

My clinical studies of this disease, during the past two years, have caused me to change many of the views which I previously held. When I began to investigate this subject, I shared the general impression of the profession that its diagnosis could not be made during life, that its clinical picture was identical with that of valvular diseases when compensation ceases. But there is an irregularity in the heart's action, and a total loss of cardiac rhythm, in cardiac fibrosis which is not present in those heart insufficiencies that often result from valvular lesions, which are its characteristic —I might say, almost its pathognomonic feature. The cardiac irregularity in other diseases is a late manifestation, and is intermitting, always accompanied by more or less appreciable disturbances of the systemic circulation. But in cardiac fibrosis the irregularity comes on early and never entirely disappears. It is not restored when the functional activity of the heart is regained. Digitalis will usually, temporarily or permanently, restore the cardiac rhythm in other affections, but not in cardiac fibrosis. The diagnostic symptoms of cardiac fibrosis may be fairly stated as follows: A feeble, rapid, irregular pulse; a diffused, feeble cardiac impulse; weak but sharp heart-sounds, the first closely resembling the second in tone and duration, and having a close resemblance to the fœtal heart-sounds. Advanced cases are subject to frequent attacks of præcordial anguish, similar to those experienced in Case I., accompanied by præcordial oppression and a sense of impending suffocation, the countenance assuming a death-like pallor, with cold extremities, and a tendency to syncope.

The intensity and constancy of this class of symptoms will vary in different cases. In some the only symptoms which will be noticed by the patient for a long time will be the feeble, fluttering, irregular, and intermitting heart action. Now and then he will complain of epigastric palpitation and temporary attacks of suffocation; and he will soon learn to avoid any prolonged physical exertion, such as ascending a long flight of stairs, for he finds that it makes him feel uncomfortable about his heart, and it takes him

some time to recover from the oppression. Usually, when this class of cases has reached the condition in which severe attacks of præcordial anguish and anginal pains are of frequent occurrence, the end is not far distant.

It is evident, therefore, that in making a diagnosis of cardiac fibrosis, we must first, by the symptoms and physical signs, determine that the heart is chronically weak, and that there are no valvular or other lesions to account for this weakness. If, then, we find the evidences of a chronically weak heart in one who has a strong fibroid history, who has hard arteries and all the signs of general lithæmia, we have reason to suspect fibrosis; and, if we find that the administration of digitalis and other cardiac tonics not only fails to restore the cardiac rhythm, but makes it more irregular and intermitting, and increases rather than relieves the cardiac apnœa, we may be quite sure that cardiac fibrosis exists, for in other cardiac affections the regularity of the heart is restored as soon as digitalis and other heart tonics have wrought their effect. The symptoms and signs presented in my second case were almost diagnostic, and should have led one to a diagnosis when he complained of his dyspeptic symptoms. I venture to affirm that an early diagnosis of cardiac fibrosis is quite possible, and if one who is familiar with the conditions under which it is most likely to occur, fully appreciating the early sign of general fibrosis, will carefully test the cardiac capacity of this class of patients, he will be able to recognize the existence of the disease before the development of those symptoms first attract the attention of the patient.

The impression has for a long time held the profession, and the statement is found in most writings on cardiac disease, "that if cardiac fibrosis could be recognized even at its commencement, its progress could not be arrested, nor could it be cured." This seems to me a great mistake, for, if we study its treatment from an etiological standpoint, I am quite sure that in many instances its development may be prevented, and in all cases its progress may be delayed. Defective nutrition of the cardiac muscle, in one way or another, must be the starting-point of all cardiac fibrosis. If, then, we determine the active causative factor in such fibrosis—be it toxic, neurotic, or traumatic—and address ourselves to its removal or counter-action, we shall have taken the most important step towards its prevention. The long list of preventive means which

will be found efficacious for accomplishing this are included under the head of diet, exercise, mode of life, climate, etc.

The time allotted me at this hour will not allow a full discussion of these measures. It is, perhaps, sufficient to say that one who has a strong fibroid heredity has a hard and constant battle to fight from the time he reaches maturity until he passes middle life. When cardiac fibrosis is once developed, then all these preventive restrictions become doubly important, and in addition to those restrictions in diet, exercise, and hygienic surroundings, which antagonize a lithæmic condition, those remedial agents must be employed which increase elimination and diminish tension. The nutritive condition of the blood must be improved by removing as rapidly and as fully as possible the nitrogenous waste products. This can best be accomplished by restricting the patient to a vegetable and milk diet, and by daily administration of citrate of potassa combined with vegetable diuretics, such as buchu and juniper, all of which increase the blood-flow through the nutrient vessels and favor the elimination of the solid elements of the urine. Free action of the bowels should be maintained by saline cathartics, of which Epsom salts is to be preferred, it must be aided by moderate exercise in the open air, and the oxidation of the waste products. The two remedial agents which are most to be relied on for accomplishing the arrest of this process are mercury and iodide of potassium. They must be alternately administered in small doses for a long period. Digitalis and all other so-called heart tonics not only give no relief to this class of patients, but rather increase the heart insufficiency, and, if given in large doses, endanger life by cardiac apnœa.

XXXV. A Case of Probable Primary Cancer of the Liver, with Biliary and Renal Calculi.

By W. D. GARLOCK, M.D.,
LITTLE FALLS.

Nancy P., spinster, housekeeper for her brother, a tenant farmer, suffered more or less from rheumatism, having, besides slight rheumatic pains at various times, two regular attacks of inflammatory rheumatism. She was subject to dyspepsia, and was generally anæmic a large part of the time during the last three or four years of her life, during which time she was more or less

under my observation. She was quite a sufferer from piles and constipation.

About three or four months before her death she consulted me about a lump or swelling (as she called it) over the hepatic region. Examination showed a firm, somewhat elastic growth over the lower border of the liver, slightly sensitive to the touch. She complained of almost no pain in the part; had noticed the growth for some time, but had not spoken of it because it was not troublesome, and the nature of the treatment I had given her had not called me to make any examination of the hepatic region.

The tumor at the first examination was apparently bilobular and about the size of a large egg. The general health was below par from a variety of causes. I had examined the epigastrium a couple of months before in my examination for dyspeptic troubles which were present. The growth quite rapidly enlarged, becoming more prominent and globular, but still not being markedly painful or tender. Cancerous cachexia gradually came on with the general symptoms, but still with little pain. There was no particular jaundice at any time. There were no symptoms leading me to suspect biliary calculi. The patient gradually grew weaker, and died, of exhaustion rather than from suffering, aged fifty-six years.

I can find no account of previous cancer in the family.

A partial post-mortem examination was permitted to verify a guarded diagnosis of cancer of the liver. The liver was found to be twice the usual size, and presented numerous globular tumors projecting from its mass. In some cases the tumors were umbilicated. The color of the liver was paler than normal, and the tumors were lighter and almost creamy in color. Section showed the liver to be studded with globular tumors, varying in size from a pea to a small orange. They were mostly easily turned from their beds in the liver tissue, but some of them were somewhat adherent. I have been unable to make a microscopical examination and drawing of sections, because of the great amount of professional work thrown upon me during the epidemic of influenza. I carefully examined the whole alimentary tract and the organs contributing their venous blood to the portal system, but with negative results. I could find no traces of cancer anywhere, and there were no apparent symptoms of cancer in any of the organs not examined.

I think the case one of primary cancer of the liver, of the nodular variety, in which the nodes were numerous and scattered through the liver. Cornil and Ranvier think this feature indicates that the cancer is secondary, and the nodes represent metastatic deposits; but Ziegler described the nodular form as being often primary but generally secondary.

I cannot, of course, say positively that this is a case of primary cancer of the liver; but I can say that, having had the fact in mind that cancer of the liver is generally secondary, I made as careful a search as I could for a cancerous source that would account for the secondary infection. I examined particularly the stomach, rectum, and uterus, but could find no source of cancer that would account for the infection, and there were no symptoms to lead me to suspect cancer in any other organ. I found the gall-bladder distended sufficiently to contain the calculi I here show you, together with a few drachms of almost colorless mucus. There was no cancerous infiltration of the gall bladder. The largest calculus was lodged in the cystic duct before its union with the hepatic duct, hence the common bile duct was not occluded, and bile reached the intestine freely, but of course without the storing function of the gall-bladder being available. There are about 150 calculi in the bottle, and there were many more, as small as mustard-seed or smaller, that escaped into the abdominal cavity. I found the abdominal organs practically healthy (except for the emaciation and anæmia), with the exception of the right kidney, in the pelvis of which I found the calculi shown in the bottle: there are about fifty of them of some size, and the amount of gravel, which is in reality only made up of small calculi, was several times the amount preserved. The calculi were, as it were, packed in wet sand, like eggs.

I do not know whether there was any obstruction of the ureter or not, but the kidney was certainly not distended, and seemed to be almost normal in its structure. I did not make any microscopical examination of it. There was, I think, some catarrhal inflammation of the mucous membrane lining the pelvis of the right kidney.

The points of interest in this case, as they occur to me, are these: First. The absence of pain in the liver during the growth of the tumor. Second. The nodular character of the growth, and the great number of foci, without any apparent source to account for them on the theory of their being secondary. Third. The occurrence of biliary calculi. Fourth. The occurrence of both hepatic and renal calculi in such numbers. Fifth. The strongly marked rheumatic diathesis, as shown by two distinct attacks of acute rheumatism and chronic dyspepsia. Sixth. The localization in the right kidney.

Let us now briefly discuss the questions alluded to: ,

First. The absence of marked pain. This is not a very unusual characteristic of primary cancer of the liver, but is rather uncommon in secondary cancer. In secondary cancer the symptoms of the primary disease are very likely to be so prominent that the hepatic symptoms are of relatively little importance. I think, from my memory of the case, that the nodules developed in the substance of the liver and grew toward the surface, and did not markedly involve the peritoneum. There were no symptoms of cancer evident in any other part of the body.

Second. The nodular or multiple character of the growths, without any evident cancer elsewhere. Of course, I will not say that there was no source of infection present; but I will say that I searched carefully for such a source, but was unable to find one, and, judging from the symptoms before death and the post-mortem findings, I think the case one of primary nature, despite the *à priori* reasons for thinking it secondary. It is possible that the cancerous nature first developed about the entrance of the portal vein or the hepatic artery, and that the general nodular character was consequent upon a primary development in the liver itself. I have reported the case as one of primary cancer, although I feel that there are grave doubts of the propriety of doing so.

Third. The occurrence of biliary calculi. Biliary calculi have been found in cases of cancer of the liver too frequently to allow us to think that they are merely accidental. I have been unable to look up the statistics in regard to the matter, and cannot say in what percentage of cases biliary calculi have been found; but Harley, in his work on *Diseases of the Liver*, seems to ascribe considerable importance to gall-stones in the etiology of cancer of the liver. Cancer of the biliary passages is very likely to be complicated by gall-stones; and Frerichs found gall-stones in nine out of eleven cases of cancer of these parts. Other similar cases have been reported. It is very probable that the disturbance of the liver, due to the growth of the cancerous nodules, will cause such alterations in the nature and the manner of formation of the bile that gall-stones are much more liable to be formed than in a healthy condition of these organs. If, as some have thought, prolonged fasting predisposes to biliary calculi, this might explain, to a certain extent, the frequency of biliary calculi in cancerous diseases, particularly in cases of cancer of the stomach, or in other conditions

where the pylorus is so contracted that the contents of the stomach do not readily pass into the duodenum. In cancer of the liver, pressure on the bile ducts may so obstruct the outflow of bile that there is a predisposition to the formation of calculi.

The patient, whose case I have reported, was thin and anæmic. It has been said that corpulent people who live largely upon rich food and fat—particularly bacon, and similar articles of diet—are more subject to gall-stones. This element in etiology was inoperative in this case. The indigestion, that was quite an element in the life of this patient, may have produced an acid condition of the contents of the stomach, and lessened the amount of alkali furnished to the liver, and in that way have predisposed to gall-stones.

Fourth. The occurrence of both hepatic and renal calculi in such numbers. I have not been able to find, in the slight amount of searching into the literature of the subject which I have been able to make, any case in which so many biliary and renal calculi were found in one patient.

The question of the formation of uric acid in the system, and particularly the importance or rôle of the liver in the oxidation of the nitrogenous waste of the various tissues preparatory to the formation of urea and uric acid, has always been an interesting one. Much more is unknown in regard to this than is at present known. Theories of different writers vary considerably, but there seems to be quite a consensus of opinion that the liver has a great deal to do with that condition of the system called "lithæmia." It would seem in this case as if the production of uric acid calculi in the kidney had more than an accidental relation to the diseased condition of the liver.

The interference with the functions of the liver induced by or consequent upon the presence of the cancerous nodules, the interference with the blood-supply to the liver cells by the pressure of these nodules, and perhaps the disturbed nervous mechanism, would naturally interfere with the proper action of the liver in the oxidation of the way-products in those lines of metabolism leading to the formation of urea and uric acid. It is probable that the liver is one of the most important organs instrumental in the oxidation of the various products leading to the formation of urea and of uric acid. If the functions of the liver are well performed, the nitrogenous waste is more completely changed into urea; while if the action of the liver is faulty or imperfect, a large amount of uric

acid appears as the final product of nitrogenous waste. If the liver is doing its work well, the leucin, tyrosin, glycin, and asparaginic acid taken up by absorbents from the intestines are converted at once into urea in their passage through the liver, in those cases where they are in excess in the portal circulation. Although uric acid can by oxidation be changed into urea and mesoxalic acid, it is not to be inferred that uric acid is always, or perhaps even generally, a way-product in the formation of urea. Foster thinks that uric acid and urea represent the final products in different lines of retrograde metabolism—the one being adapted rather to the excretion of the nitrogenous waste in a solid form, as shown in the secretion of the kidneys of birds and reptiles, while urea represents the final product of nitrogenous waste in those animals where the excretion of the kidneys contains a large amount of fluid.

According to the theory of evolution, birds and reptiles are closely related—having probably, so to say, descended from some common intermediate stock, while mammals are less related to either of these than they are to one another, and represent a higher development in the evolution of the animal organism.

Mendelson thinks that it is not unreasonable to assume that, in health, of the total amount of uric acid produced only the smaller part is finally eliminated as urates, the balance being converted into urea, without wishing to imply that all of the urea has been derived from uric acid. In herbivora no uric acid occurs in the urine, its place being taken by hippuric acid. Nevertheless, uric acid is found in the spleen of herbivora. Direct electric stimulation of the liver increases the amount of urea, according to Stolnikow, while destructive processes—as phosphorus-poisoning, acute yellow atrophy, suppurative hepatitis, cirrhosis, etc.—greatly diminish it, its place being taken by the unchanged products of pancreatic digestion, which then appear in the urine. The imperfect digestion and the fermentation of the partly digested food would contribute its share to the production of uric acid diathesis. The enfeeblement of the body would produce a condition of suboxidation in the system which would predispose to uric acid troubles.

It is interesting to note the importance of the use of alkaline mineral waters in counteracting the tendency to the production of both biliary and renal calculi. The general treatment, or the principles that underlie the treatment of the two conditions, are much the same. The alkaline carbonates—particularly those of sodium,

potassium, and lithium—given at the end of the gastric digestion, or about the time that the contents of the stomach pass through the pylorus into the duodenum, have a beneficial influence over both the liver and the kidneys. Supplying artificially alkalies to neutralize the acid contents of the stomach relieves the liver of the necessity of forming so much bile, because the bile is the principal alkaline fluid that neutralizes the contents of the stomach when they reach the duodenum. It has also been found that when it is desired to diminish the acidity of the urine alkalies are more effective when given in this way. If alkalies are given just before meals they promote the secretion of acid in the stomach; if they are given too soon after meals they neutralize the contents of the stomach more or less, and interfere with the thoroughness of the gastric digestion; if the alkalies are given just at the end of the gastric digestion they do not seem to increase the amount of acid in any of the secretions. The giving of alkalies—and particularly of those alkalies represented in the Carlsbad and Vichy springs—supplies to the liver many of the salts needed in the elaboration of the biliary salts; and in cases where a milk diet is used sodium and potassium salts are not taken into the system in the proper amount. The presence of alkalies in the blood, as is well known, diminishes the acidity of the urine, and promotes the change of the insoluble uric acid into the soluble urates.

Fifth. The strongly marked rheumatic diathesis, as shown by two distinct attacks of acute rheumatism and chronic dyspepsia. Here I simply wish to call attention to the presence in one patient of the general condition of the suboxidation present, as shown by rheumatism, dyspepsia, and uric acid calculi.

Sixth. The localization in the right kidney. The fact that calculi were found in the right kidney, and not in the left, leads us to look for some explanation. If the formation of uric acid calculi is simply dependent upon the uric acid diathesis, we would naturally look for calculi in both kidneys in a case like this. The most probable explanation, it occurs to me, is that in some way or other pressure of the growing tumors in the liver interfered with the circulation in the pelvis of the right kidney, and induced a catarrhal condition of the pelvis.

In this connection the experiments of Rainey, performed in 1857, are of interest—when he succeeded in forming, by the separation from saturated solutions of a saline in gum arabic mucilage, spheres

having all the hardness of pearls, and showing radial and concentric markings. He demonstrated that his spheres were built up by slow coalescence of molecules, and not according to the usual mode of crystallization. Ord and others have followed up Rainey's investigations, and, summed up briefly, they are these: If a colloid substance is present in the menstruum in which salts are dissolved, it favors the formation of globular masses instead of crystals when for any reason the salt is precipitated. If no colloid is present, the natural crystalline form is assumed. Mucus is less efficient than muco-pus in this respect, but the power of both is greatly intensified by partial degeneration.

I very much regret that I am unable to say positively whether the cancer was primary or secondary, but the most interesting features of the case are not dependent upon this question. The removal of the nitrogenous waste from the system, and the conditions induced by its imperfect elimination, underlie so many diseases and conditions that their study will always be one of the most interesting things in the theory of medicine.

XXXVI. Biliary Calculus; its Diagnosis and Treatment.

By C. W. DE BAUN, M.D.,
FONDA.

In selecting this subject for my paper to-day, I have been prompted by no new theories nor ideas either as to diagnosis or treatment, for the literature upon this subject is profuse and much of it of very recent date, and the entire ground has been thoroughly gone over by the most eminent medical authorities; yet the subject is of much interest, and of great importance to the general practitioner, especially as regards the early diagnosis of the disease, and the relief of the more urgent symptoms.

Despite opinions to the contrary, the diagnosis of gall-stones carries with it much that is obscure and troublesome. We have the assurance of experienced authors and clinicians, and we know ourselves, that under some circumstances the presence of gall-stones remains unrecognized, though it has existed for years, and only at

the autopsy are its effects and its mischief brought to light. In many cases, when the stones are small and their surfaces smooth, they pass through the common duct and into the intestine without causing any very great disturbance, and so long as the calculi remain in the gall-bladder the symptoms of their presence there are unrecognized. Dr. Putnam-Jacobi, upon examining post-mortem the body of a patient who, after suffering with many attacks of hepatic colic, died of another disease, found several calculi in the gall-bladder, one as large as a walnut; yet the ductus choledochus was not enlarged. The inference was, that as the gall-stone was too large to enter the duct, the pain suffered must have been due to spasmodic contraction of the gall-bladder alone—a true cholecystic colic. Many cases are on record of death from intestinal obstruction, or other accident caused by them, without previous history of hepatic colic or pain. In quite a percentage of cases of true biliary colic the characteristic jaundice is absent, and here we lose a valuable guide to diagnosis. Jaundice will not generally occur if the calculus is not detained beyond a day or so in the common duct. Twenty-five of Wolff's forty-five cases passed through the whole train of symptoms without it, the concretions being found in the evacuations.

Gall-stones producing severe rigors and intermittent pyrexia may be readily confounded with an attack of malaria. Charcot regards these cases as having their seat of irritation in the duct, and analogous to his uro-septic fever from like irritation of the urinary passages. They are more largely and properly regarded, however, as merely reflex nervous phenomena. The attacks are characterized by chilliness and shivering, sometimes quite severe and prolonged, but with less fever than in true ague, and followed by sweating, but differing from ague in their irregular return, and by symptoms of hepatic pain, followed by jaundice.

Cardialgia may be mistaken for gall-stone colic when there is no jaundice. In cardialgia pain comes on directly after eating, while gall-stone colic has no necessary connection with taking food. In biliary colic the pain shoots to the right shoulder, to the scapula, and to the back, while in cardialgia the pain is referred to the epigastrium alone. In biliary colic the pain suddenly ceases, in cardialgia it gradually subsides. In intestinal colic, which may also be taken for biliary colic, the pain begins at the umbilicus and radiates over the abdomen, is relieved by pressure, is intermittent,

accompanies or is followed by diarrhœa, and jaundice is never present.

Cancer of the head of the pancreas may also be confounded with biliary colic, and it may be well to say here that biliary calculi and malignant disease of the gall-bladder and pancreas have been found so frequently coexisting by different observers that the influence of the biliary state in producing malignant disease of the surrounding organs, has been thought to be more real than accidental.

In the cases of gall-stone colic which I have observed, the paroxysms of pain have shown themselves frequently after having experienced great fatigue, exposure in damp, rainy weather, and after jolting exercise, as long rides over rough roads. I have noticed, too, in some of my cases, that the attacks were more frequent in the spring and fall seasons than at other times, and whether that is merely a coincidence or whether it is indirectly due to some of the circumstances I have just described, I cannot say. Of course, the presence of the gall-stones in the evacuations is pathognomonic; the distended gall-bladder presenting is pretty positive evidence; but in cases where neither of these diagnostic points can be detected, a diagnosis is necessarily most obscure.

In regard to the treatment of these cases, two objects are to be attempted—the relief of the paroxysms and the cure of the calculus state. In the milder attacks of colic, hot fomentations, the warm bath, and the internal administration of belladonna may be sufficient to allay the pain, the belladonna often serving a double purpose in relaxing the rigid abdominal muscles and quieting the pain. At the onset of an attack large draughts of warm water, with bicarbonate of soda, may be of service. I have found much good also in the use of small doses of calomel, followed by three or four ounce doses of olive oil, for the purpose of aborting a threatened attack of colic, but this means must be resorted to when the earliest premonitory symptoms present. In the more severe attacks morphine is the only drug to be relied upon, and its effect may be aided by the inhalation of chloroform or ether if necessary. The subcutaneous administration of morphine is especially preferable in these cases on account of the extreme irritability of the stomach, which almost invariably accompanies them. As a general rule, emetics should be omitted, as they seem of no value, and certainly increase the pain and risk by the retching they induce.

In the treatment of the calculus state the prophylactic measures

are the first to claim our attention. The diet should be exclusive of fatty and saccharine articles of food, also starches so far as possible. Indulgence in malt liquors must be forbidden. Peptonized foods, milk, fresh meat, and the succulent vegetables are the proper constituents of diet. In many cases, however, milk seems repulsive to the stomach, is not easy to be digested, and gives rise to annoying gastric disturbance, so that the cautious use of it at first is advisable. The use of bread should be restricted. Next to the regulated diet, systematic exercise is of the highest advantage, as it is well known that sedentary habits and an insufficient amount of fresh air are particularly conducive to the formation of gall-stone concretions where the predisposition is already present. A daily sponge-bath in alkaline water is also useful, as it maintains the skin in a healthy condition and promotes the oxidization processes of the body.

Of the medicinal agents, many have been vaunted from time to time as specifics in one way or another, but the general experience to-day is that specifics won't work. It requires too much imagination for the conservative mind to believe that the use of Durand's mixture, for instance, will dissolve a gall-bladderful of cholesterine concretions, and now, after an extended use by the profession for nearly a century, its solvent properties upon the gall-stone within the gall-bladder, unless perchance by hypodermic use, are generally discredited, while it is still useful in allaying spasms and promoting the flow of the pancreatic secretion. The most effective agents in restoring the solvent power of the bile are the salts of soda, of which the phosphate and the sulphate are preferred. The phosphate seems more active when given in warm water. These agents have been productive of the happiest results, but to be effective their use must extend over a somewhat long period of time. The alkaline mineral waters, whether by giving an alkaline bile or whether by an increase in the amount secreted, cause the number of gall-stones to diminish, and also allow them to be passed with less pain.

When, however, a clearly diagnosed case of gall-stones is not cured by medicinal means, and the recurrence of the colic continues, it is plainly the physician's duty to seek surgical aid. The surgical part of the subject I have not the time to dwell upon, but those who are interested in the surgery of the gall-bladder I would refer to Dr. Albert Vander Veer's excellent article upon this subject in the

Transactions of the American Association of Obstetricians and Gynecologists, 1891, in which the surgery of this organ is fully dealt with.

XXXVII. Perforation of Typhoid Ulcer, with Adhesive and Protective Peritonitis.

By HENRY L. ELSNER, M.D.,
SYRACUSE.

In presenting this paper to you for consideration I am prompted by the importance of the subject, the growing interest manifested by the profession for accurate clinical data relating to all unusual abdominal complications arising in the course of typhoid fever, and an appreciation of the fact that while much has been written and said, both by physicians and surgeons, on the indications for treatment of intestinal perforation, medical and surgical, the subject is still *sub judice* and requires a flood of light which can only be supplied by the study of many cases at the bedside and on the post-mortem table. While I am to report but a single case, I find on consulting the literature of the subject that it is sufficiently rare to demand your attention, and from it I feel that we can draw valuable deductions when associated with other experiences which have accumulated in the past.

On the 27th of October, 1891, G. G., German, shoemaker, aged twenty-seven years, was admitted into St. Joseph's Hospital, Syracuse, N. Y. Previously healthy, with negative family history. To all appearances he was a temperate man, well nourished, weighing about one hundred and eighty pounds. He was sent to the hospital by my assistant, Dr. Werfelman, whom he had consulted during the day and who diagnosed walking typhoid fever. We judged him to be well advanced in the second week of the disease, for there was already a well-marked and characteristic roseola eruption on the abdomen. He had not been feeling well for three weeks, during which time he had nose-bleed at frequent intervals, felt nauseated, vomited several times and had all the usual manifestations of approaching disease. He had no chill, but had felt hot and feverish while at his work; had no diarrhœa before entering the hospital, but complained much of constipation.

On admission we found the characteristic apathy of typhoid, tongue dry and heavily coated, abdomen slightly distended and tympanitic, with but little pain on pressure in the right iliac region. A considerable amount of

hypostatic congestion was found at the base of both lungs; temperature 103.2°, pulse 93, respiration 22. During the following seven days there were no noteworthy symptoms; the temperature was easily controlled, never rising above 103.8°; the pulse rarely exceeding 100, usually between 90 and 100. There was but little delirium, no diarrhœa, and aside from the roseola eruption which persisted, and the usual tympany found in like cases, no positive symptoms. He had been carefully watched and nursed, kept on a liquid diet without antipyretics, treated with intestinal antiseptics. On the morning of November 3d, while making my daily visit, I noticed a decided change in the appearance of the patient. The facial expression denoted serious trouble—it was anxious, with eyes sunken. He was having constant hiccough, vomiting of a dark green fluid, and complained of pain, not severe, however, in the upper right corner of the hypogastric region. His pulse from 90 the night before, had by noon reached 120, while his temperature was 103°. Physical examination of abdomen gave increasing tenderness on pressure in the right inguinal and adjacent hypogastric region, while the neighboring regions were tympanitic. By afternoon, a well-marked dulness on percussion was found in the right half of the hypogastric region, extending into the right inguinal region, though at this time palpation did not reveal the presence of a tumor. For eight hours there was anuria, which was followed by scanty urination; no movement of the bowels during the day. At times, during the night of November 3d, his pulse reached 140, his hiccough and vomiting continuing without sufficient pain to demand administration of opiates.

On the morning of the 4th, patient's general appearance was not improved. The anxious expression was still present, his extremities were cold, the hiccough and vomiting continued. It was now evident, on making a physical examination, that we had a tumor, the largest portion of which was situated in the right upper half of the hypogastric, slanting downward into the right inguinal region. This was plainly and easily outlined by palpation and percussion. It was not exactly in the position usually occupied by a tumor associated with disease of the vermiform appendix, neither could the McBurney point be found. The symptoms simulated appendicitis so closely, however, that one was almost tempted to make that diagnosis.

On taking into consideration the rarity of such a complication with typhoid, in spite of the frequency with which it has been diagnosed, the presence of the tumor in a somewhat anomalous position, the absence of the McBurney point, the unusual amount of vomiting and hiccough, with at this time no evidence of perforation, and the general condition of the patient, a diagnosis of localized peritonitis over a typhoid ulcer, with adhesion to a neighboring coil of intestine, was made. Temperature 100.5°; pulse 124. During the day there was no material change in the condition of the patient; the pulse continued rapid, averaging 140, with rapid thoracic breathing, somewhat more tympany over lower half of abdomen; no movement of bowels. Urine scanty, not albuminous.

On the morning of the 5th, he was brought before my class for clinic. His temperature had fallen to 97.2° and remained there during the day; his pulse was 111 to 140, respirations 30 to 40; extremities cold, wrists cold,

less hiccough and vomiting. The tumor was still present, as easily outlined as the day before. His bowels moved during the day. A careful examination was made of the abdomen. In spite of the decided fall of temperature, no other evidence of perforation of typhoid ulcer was present. Liver dulness was not effaced. At the clinic it was concluded that we had a perforation of the ulcer, following the localized peritonitis, the escape of gas into the free peritoneum prevented by sufficient plastic exudate and recent adhesions. During the afternoon it was found that while tympanites in the lower half of the abdomen was increasing sufficient to make the detection of the original tumor impossible, there was still persistence of liver dulness.

November 6th. Patient much more comfortable, with temperature 97.5°, pulse 111. Lower half of abdomen still tympanitic. Tumor lost; its position could no longer be determined; its previous area yielding tympanitic percussion note. Toward night, temperature gradually rose to 99.2°, pulse 100. Bowels had moved during the day. No opiates were administered at any time, that the symptoms might not be masked; besides, there were no indications for their administration. During November 7th and 8th, there were no decided changes in the patient's condition. His temperature remained above normal; pulse improved in character, though equally rapid as before; his bowels moved; mind remained clear; tympany slowly subsiding, so that on the morning of the 9th, though his temperature was 101°, pulse 123, he was looking much better and the original tumor was again palpable and in same position as originally found. His hiccough and vomiting had ceased; he could lie on his side, while before he had rested on his back. We had now commenced to doubt the correctness of our diagnosis, and were ready to take a more favorable view of the case than heretofore.

The morning of the 10th found our patient in better condition than we had left him the previous night; his temperature 99°, pulse 110, facial expression good, abdominal walls lax, no tympany, physical signs of original tumor present. During the day, from 3 P.M. to 8 P.M., he had five large intestinal hemorrhages and died almost exsanguinated at 8 P. M.

Autopsy (by Dr. F. W. Sears). There was nothing noteworthy in the appearance of the body; our attention being called to the abdomen by the symptoms, it alone was examined. On opening the abdomen the intestinal coils were considerably dilated; the peritoneum abnormally congested and lustreless without evidences of general peritonitis, save in a few spots where a small amount of plastic exudate was noticeable. In the right half of the hypogastric and the right inguinal regions, were found well-marked evidences of recent plastic and circumscribed peritonitis. A coil of the ileum, beginning about five inches above the ileo-cæcal valve, had folded itself against the head of the colon laterally, and was there firmly held by the recent products of inflammation. Nowhere were found evidences of any escape of intestinal contents into the peritoneal cavity. This coil of ileum was everywhere surrounded by fibrinous and purulent material sufficient to encapsule it and separate it from the free peritoneal cavity, while it rested against the colon on a pillow of almost completely organized fibrinous material. On raising this coil slowly and carefully from its resting-place without much force, the escape of air from the intestines was plainly audible. In this

portion of the intestines, resting directly against the colon, a perforation of a typhoid ulcer, about two centimetres in length, was found; it was also evident that the peritonitis had spent its greatest force around this ulceration.

Other portions of the intestines were examined, also the colon, with a view of determining the origin of the fatal hemorrhages without satisfactory result. Our clinical diagnosis, therefore, was corroborated by the anatomical appearances. So perfectly was the perforation sealed by the adhesive and protective peritonitis, that no gas escaped during the post-mortem, until the ileum was lifted from its resting-place, when it was found that the perforation itself had not closed, was simply sealed by its fortunate position against the colon, where Nature's process held it. There was no escape of feces in the enclosure made by the adhesions.

It appears to me that in this case we have several features of unusual interest. The fact that a localized peritonitis over a typhoid ulcer may exist before its perforation and protect the free peritoneal cavity, is in itself sufficient to claim more than passing notice. The other interesting features of the case are the length of time that the patient lived after perforation, the gradual improvement preceding the fatal hemorrhage, the continuation of the performance of intestinal function, the existence of the tumor, the absence of effacement of liver dulness, and the unhappy termination of the case by copious intestinal hemorrhages.

Griesinger[1] many years ago, when he wrote his memorable article on "Typhoid Fever" in Virchow's *Pathologie und Therapie*, spoke of just such cases as this. The following is a literal translation: "Evidently in consequence of deep ulceration from within and sloughing, there frequently results even before perforation a localized inflammatory process, with adhesions of the inflamed patch to the neighboring intestinal coils. In such cases there is not at once perforation into the free peritoneal cavity. There is, however, a formation of circumscribed exudation, with or without suppuration, which may ultimately lead to general peritonitis, though it may possibly remain circumscribed, and gradually end in recovery. If there has been no adhesive process before the perforation, gas and intestinal contents escape into the free peritoneal cavity and general peritonitis immediately results."

It was a similar case which first led Buhl[2] to suggest the possibility of recovery after perforation of a typhoid ulcer. This, I believe, was in 1857. In Buhl's case, death occurred on the forty-

[1] Virchow: Handbuch der speciellen Pathologie und Therapie, Band ii, 2te Abtheil., p. 196.

[2] Henle und Pfeufer: Zeitschr., N. F. vii. p. 12.

fifth day of the disease, and twenty-three days after perforation. In his case, as in mine, the perforation was not the immediate cause of death, his patient dying as the result of hemorrhage of a small artery opening into the intestine, near the piece of mesentery which covered the hole. In Buhl's case, however, the hole was completely closed. The report of this case at my command does not mention the manner of closure. There can be no doubt, and some of us could corroborate the fact by clinical experience, that a localized peritonitis without perforation around a typhoid ulcer may exist, giving rise to sufficient adhesion and inflammatory products to form a tumor which, for reasons which I will enumerate further on, simulates appendicitis.

In this connection, I wish to say a few words in regard to the differential diagnosis between such tumor-formation as was found in the case reported, and appendicitis, and the prognosis of such cases. In a very interesting and instructive paper recently read before the Association of American Physicians, Professor Fitz, of Harvard University,[1] says:

"Most cases of recovery from symptoms of perforation of the bowel in typhoid fever, are those in which an attack of appendicitis is closely simulated, while the fatal cases of perforation of the bowel in typhoid fever are, in the great majority of instances, those in which other parts of the bowel than the appendix are the seat of a perforation. Hence the prognosis of apparent perforation in typhoid fever is to be regarded as the more favorable the more closely the symptoms and course resemble those of an appendicitis."

You will kindly note that the author uses the words "simulate" and "resemble." This, it appears to me, is a happy use of the words. While the diagnosis of appendicitis in typhoid fever has been frequently made, anatomical proof is wanting to establish such diagnosis. While there is some difference of opinion with regard to the exact proportion of cases of appendicitis occurring in conjunction with typhoid fever, anatomical evidence would not place the proportion above 3 per cent.; thus Fitz in collecting 167 cases of perforated bowel in typhoid fever, found but 5 cases, or a little less than 3 per cent. Murchison[2] found it but once in 39

[1] Boston Medical and Surgical Journal, October 8, 1891, p. 365.

[2] Treatise on Continued Fever. Second edition, p. 623.

cases. Other authorities, among them Morin,[1] found perforation of the appendix in 18.75 per cent. Heschel,[2] in 14.3 per cent. It is difficult to reconcile these great differences of the various writers. In New York at least, where, according to Professor Lange,[3] appendicitis occurs with such astonishing frequency, it would be easy to establish the fact of ulceration and perforation of the appendix with typhoid fever, if it existed. The records of hospitals and the experiences of physicians fail to establish that fact. It is safer, therefore, for us as clinicians and therapeutists to adopt the statistics of Fitz.

Reasoning from our daily clinical and growing experiences with perforative appendicitis, we must conclude that if perforation of the appendix in typhoid fever is of such frequent occurrence, that fact ought necessarily to be established by positive pathological appearances. Perforative appendicitis without typhoid fever is, as a rule, a fatal disease unless relieved at once by surgical art. Why then in typhoid fever should a perforated appendix give a more hopeful prognosis? There is but one way in which the clinical fact that perforation simulating appendicitis gives a more favorable prognosis can be explained. The usual seat of perforation in typhoid fever is located in the ileum, the larger number of perforations near the ileo-cæcal valve; but few perforations exist without more or less plastic exudate. The adhesions of coils of ileum, near the colon, as in my case, would necessarily simulate appendicitis. This is the only clinical explanation which can be offered.

Among the differential points to be taken into consideration in the diagnosis of appendicitis from typhoid perforation, we must consider the more sudden onset, as a rule, of general peritonitis, without preceding appendical tumor, the profound change in the facial expression of the patient, the absence of the McBurney point, and the persistence in many cases of anuria of from eight to twelve hours or longer. In doubtful cases a rectal examination might be of assistance. Certainly the previous history, with pulse and temperature chart, would be considered as factors in reaching a conclusion. Simple perforative appendicitis would be sudden, without preceding malaise or evidences of approaching sickness.

[1] Thèse, Paris, 1869.

[2] Schmidt's Jahrbuch., 1853, lxxx. p. 42.

[3] New York medicinische Monatsschrift, 1891, Band iii. p. 90.

The occurrence of such an accident as reported in this case would be more readily diagnosed in an afebrile condition than at a time when the typhoid process is at its height. Such cases as these teach us the value of oft-repeated and careful examinations of the abdominal viscera in typhoid fever.

There is still another point which I wish to bring to your notice in conjunction with this case. It is the persistence of liver dulness, in spite of the fact that we had intestinal perforation. To those of you who have studied the views of the various writers on this subject, it must appear surprising to find such a wide difference of opinion as to the value of effacement of liver dulness in cases of perforation or air in the free peritoneal cavity. Flint[1] wrote a paper in which he held that effacement of liver dulness was one of the most characteristic signs of perforation. He reports the case of a young woman who developed an acute, diffuse peritonitis in the course of typhoid fever, with persistence of hepatic dulness, from which fact he concluded that intestinal perforation had not taken place, and from the fact that death did not occur until a week after the occurrence of peritonitis. As there was no autopsy in this case the diagnosis may be doubted. The time of death ought not to weigh in the diagnosis.

The differences of opinion with regard to the effacement of liver dulness, it appears, to me, can be reconciled if we take into consideration the two great sources of error. First. An unusually distended transverse colon by its presence between the liver and abdominal wall, yielding on percussion tympany anteriorly over the area of normal liver dulness, without perforation existing. Second. Perforation in those cases where, as the result of adhesive inflammation, encapsulation, bands or from other causes, air or gas is held within a circumscribed area or in the lower half of the abdomen, without effacement of liver dulness. The careful examination of the abdomen would reveal the presence of these sources of error by placing the patient upon the left side, and percussing in the axillary line on the right side over the liver, from the eighth rib downward, the presence of free air in the peritoneal cavity showing itself by a disappearance of dulness in that line, while there would be a persistence of dulness if the anterior tympany had been caused by the distended transverse colon. This

[1] The Medical News, Philadelphia, 1882, vol. i. p. 150.

manœuvre has frequently assisted me, and is mentioned by Leube[1] and Gerhardt[2] as a valuable means of differential diagnosis.

In the case here reported we had in the persistence of liver dulness, in conjunction with the other symptoms which the case offered, abundant evidences of a perforation, so that while we are all agreed that, with air in the free peritoneal cavity, we have in effacement of liver dulness a most valuable aid in strengthening the diagnosis of intestinal perforation, the presence of liver dulness with symptoms of perforation, would lead us to suspect protective adhesions or sufficient encapsulation.

My case is another one to be added to the list of those which must materially affect the prognosis of typhoid perforation. The anatomical appearances were sufficient to convince all those present at the autopsy that the cause of death was in no way traceable to the perforation.

Finally, the question of surgical interference in this class of cases must be taken into consideration. I would not weary you with a single word in connection with that subject, had I not seen the article recently written by Van Hook[3] on "Laparotomy for Intestinal Perforation in Typhoid Fever," in which the author reports three cases operated upon, one of which was successful. Among his conclusions he says that "there is no rational treatment for perforation in the course of typhoid fever except laparotomy. The only contra-indication is a moribund condition of the patient." He also says that "the symptoms of peritonitis should not be awaited before operating." It appears to me that these conclusions are too extreme, cannot be safely followed, and do not take into consideration the possibility of preceding adhesive and protective peritonitis to guard the general peritoneum, and the possibility of recovery from such an accident.

It would be far safer for us to follow the more conservative course of Da Costa,[4] who, in the recent discussion on the subject, said that he would "never sanction an operation in perforation unless a causal appendicitis could be clearly made out, or for the relief of a patient from a peritonitis."

The conclusion reached by Fitz[5] must have some weight in our

[1] Specielle Diagnose der Inneren-Krankheiten, Leipzig, 1889, p. 345.

[2] Lehrbuch der Auscultation und Percussion, Tubingen, 1890, p. 335.

[3] Medical News, Philadelphia, 1891, vol. ii. p. 591-595.

[4] Boston Medical and Surgical Journal, October 22, 1891, p. 441.

[5] Ibid., October 8, 1891, p. 367.

decision, inasmuch as his thorough study of the subject gives his opinion great value. He opposes immediate laparotomy for the relief of suspected intestinal perforation, advising it only in the milder cases of this disease. "In all others, evidences of a circumscribed peritonitis should be awaited and may be expected in the course of a few days." If this condition requires surgical interference, it will be well for us to delay until the strength of the patient warrants it.

Conclusions.—1. A localized peritonitis over or in the neighborhood of a typhoid ulcer may exist without perforation.

2. Localized adhesive and protective peritonitis over or in the neighborhood of a typhoid ulcer may precede perforation and protect the free peritoneal cavity.

3. In some cases coils of intestine may become adherent, giving rise to tumor-formation.

4. Symptoms simulating or approaching perforative appendicitis may exist, making a differential diagnosis between appendicitis and typhoid perforation with adhesions difficult.

5. Anatomical research proves conclusively that perforative typhoid appendicitis is exceedingly rare.

6. The prognosis of typhoid perforation is more favorable in proportion to the amount of circumscribed peritonitis and nearness with which ordinary appendicitis is simulated.

7. Localized peritonitis preceding perforation and ultimate perforation can be diagnosed in some cases.

8. Persistence of liver dulness does not preclude the possibility of intestinal perforation. Air and gas may escape into the lower abdominal region and may be held there by adhesions without changing liver dulness.

9. With effacement of liver dulness we must make sure by physical examination that such change is not due to the presence of an abnormally distended transverse colon.

10. Surgeons are not justified in performing laparotomy for the suturing of perforated typhoid ulcers, if circumscribed peritonitis of an adhesive or protective character exists, or is in process of development.

DISCUSSION.

Dr. A. Jacobi, of New York: The author has spoken of a local peritonitis outside of and over a typhoid ulcer. That is a point of

great practical importance. When an intestinal ulcer involves not only the mucous membrane, but the muscular coat as well, it is very apt to produce a local peritonitis outside. In a large number of autopsies, where no history of disease is known, we find local discolorations of the intestinal peritoneum, indicating former inflammatory change. Little white or yellow spots are observed, and on passing the finger over them many will show a slight elevation. Under the microscope we find granular or fatty degeneration, not normal tissue. Such degeneration is always the result of a previous chronic inflammation. It is not necessary to have typhoid fever in order that these changes may take place. They may be caused by an old dysentery or a chronic diarrhœa in childhood. I have seen such cases go on to perforation in after years. We hear now and then of persons in full health dying from sudden perforation of the intestine. Spontaneous perforations of this kind are due to an old local peritonitis. I have related a case in my little book on intestinal diseases in children.

The point of practical importance is, that we should not allow intestinal diarrhœas to go on in children or grown people, as is too often done. In all cases of typhoid fever we ought to see that the intestinal tract is disinfected. Summer diarrhœas lead more frequently than anything else to secondary peritonitis and future troubles connected with the intestine.

XXXVIII. The Teachings of Experience and of Rational Therapeutics as to the Treatment of Pneumonia.[1]

By BOARDMAN REED, M.D.,
ATLANTIC CITY, N. J.

The mortality from pneumonia under the heroic measures that were prevalent up to about the middle of the present century is shown by the collated statistics, from hospitals mostly, to have been 10.2 per cent. in a total of 17,278 cases, this being the average of this number of cases of fifteen collections of not less than 100 each, reported prior to the year 1856. Laennec in 1825 estimated the mortality from pneumonia in his day to have been from 12.5 to 16.6 per cent., when the established custom was to treat the

[1] An abstract read at the annual meeting. The paper in full is printed in the Therapeutic Gazette, March 15 and April 15, 1892.

disease by repeated venesections, active purgatives, and emetics. Skoda estimated the average mortality in 1841 at 12.5 per cent. In non-military hospitals 15.3 per cent. may be accepted as approximating the average mortality rate. In the United States army, from 1840 to 1854, when venesection and other active measures prevailed, there were 1416 cases of pneumonia, with a death-rate of 8.9 per cent., and in an aggregate of 11,128 cases in the United States and British armies up to 1856 there was a mortality of only 7.3 per cent. All of these were treated in the heroic era, when venesection and other energetic, but often debilitating, measures were in vogue.

During the war of the Rebellion in the United States—in a period which was a transitional one in the treatment of pneumonia, when expectant measures predominated—there were 77,335 cases, with a mortality of 26.1 per cent., among the white troops alone. The treatment, as described by Dr. Charles Smart, was generally one of expectancy, depletion being rarely employed, and may be summed up briefly as "stimulants, expectorants, Dover's powders, and poultices." In the Prussian army during the period of 1868 to 1878, excluding the years of war (1870 and 1871), a mortality of only 3.6 per cent. was reported, the treatment being active, and consisting of cold wet packs: venesection for the vigorous when attacks were severe; wet cups when the pain was intense; tartar emetic or veratrum viride in violent cases.

The hospital reports of recent times show a mortality varying from 20.3 to 48 per cent. The treatment as reported has generally been expectant and sustaining. It is manifest from the statistics, civil and military, that even an excessively energetic treatment of pneumonia has saved a larger proportion of lives than the expectant method.

As a rule, the methods of treatment which in recent years, as well as in the older times, are claimed to have achieved exceptionally favorable results, involve active and energetic interference, especially in the first stage. Some leading clinicians have recently been working on these lines, and with most promising results. Their various plans all agree in diverting the excess of blood from the engorged lung, whether through purgation, diaphoresis and diuresis, active counter-irritation, or several of these combined. By measures and remedies designed to equalize the circulation, thereby relieving the engorgement of the lung, as well as the em-

barrassment of the right heart, better results have been obtained than under either venesection or expectancy. Veratrum viride, as an efficient cardiac sedative, has been most successfully used, during the first stage especially, to which many have testified. Aconite, the nitrites, jaborandi, and baths, or other hydro-therapeutic measures, are among other chief means employed for this purpose. By some of these means numerous physicians in large practice claim to have succeeded in saving all their cases of pneumonia, frequently aborting the severest attack within twenty-four or thirty-six hours.

From the statistics and clinical reports collated in the paper the following conclusions seem to be fully justified:

1. That water locally applied, either by wet pack or in the form of baths, is the most efficient single remedy for acute pneumonia.

2. That either veratrum viride or aconite can accomplish more than any other single drug in the first stage, and that the same is true of digitalis in the second stage.

3. That a combination of one of these cardiac sedatives with opium and diaphoretics affords not only a safe but eminently successful internal treatment for the first stage, being capable of aborting the disease when administered near the onset and repeated at short intervals day and night.

4. That venesection, though most efficient in sthenic forms of pneumonia and much more successful than any merely expectant method, is no longer an indispensable resource, since other remedies have been found to accomplish the result more surely and pleasantly.

XXXIX. A Pathological Review of Diphtheria, with Special Reference to a New Method of Treatment, Based upon the Past Three Years' Experience of its Remedial Value in Twenty-two Cases.

By F. E. MARTINDALE, M.D.,
PORT RICHMOND.

Diphtheria is one of the oldest epidemic diseases of the human race, but it was little known as an infectious disease until Bretonneau laid his treatise, upon its essential characteristics of an exudation in the throat, before the Academy of Medicine of France, in

1821. The more recent clinical observations of Virchow, who first directed attention to the occurrence in diphtheritic inflammation of an exudation into the substance of the mucous membrane followed by sloughing, constituted the most important advance in determining the true pathological conditions underlying systemic poisoning in this disease. It has, however, only been since a comparatively recent period that the true pathogenesis of diphtheria was determined by Hueter[1] and Oertel[2] in the discovery of the vegetable organisms to which Oertel gave the name of micrococci. Certain it is, that in this country very little was known of the peculiar infective tendencies of this local exudation in the direction of general sepsis prior to 1850, for a very distinct remembrance has been impressed upon my mind of having been treated, sometime in the early forties, for an attack of what was then termed "putrid sore-throat," and having had my throat swabbed at frequent intervals during treatment with a solution of salt, red pepper, and vinegar, then regarded as the *ne plus ultra* of remedies for this special type of local sepsis. It may here be noted that the disease occurred in the early spring, when the unventilated cellar of the paternal mansion, used during the winter for storing potatoes, was saturated with drainage due to the spring freshet—which leads to the question, of some interest in this connection, whether the vegetable germ "peronospora infectans," said to possess great vitality and having for its habitat and feeding-ground the common potato, which in country localities is always stored during the winter in the old-time house cellar, imperfectly drained, unlighted, and unventilated, is not, in fact, the efficient *materia morbi* of every diphtheritic exudation, and the micrococcus Oertel claims as constituting that disease. Three cases occurring in a well-to-do farmer's family in Richmond County seem to sustain this theory: the chimney from the cellar, in which a large quantity of potatoes were stored, communicating with the room where the children slept; it being impossible to assign other cause for the outbreak. Since the construction of a potato cellar elsewhere there has been no recurrence of the disease.

It may be assumed that diphtheria is always at first a local disease, becoming by multiplication of germs and enlargement of area by infection general in its character, ranging in severity from sim ple

[1] Hueter and Tomassi: Centralbl., 1868, Nos. 31-34.
[2] Studien über Dipth., Aerztl. Int., 1868.

excitement of the circulation to the gravest form of typhoid and pyæmic poisoning. Invariably selecting the air-passages, the destructive changes involved are wholly due to the favorable conditions found for the propagation and dissemination through the circulatory system of its specific germs, this pathological fact having been determined by Oertel[1] through a series of inoculations of animals made in conjunction with Hueter, Trendelenburg, and Nasseloff, for this specific purpose.

It being established that diphtheria is an infiltration of living tissues with the vegetable germs termed micrococci, and that their prompt destruction is a *sine quâ non* to the safety of the individual, we are confronted with the problem of how these septic germs are to be rendered harmless without injury to the adjacent tissues. It becomes clear that the remedy best calculated to rid the system of these septic germs will be an atmosphere harmless to the respiratory organs and yet so saturated with a germicide as to promptly destroy the rapidly propagating germs. When the larynx is affected the only effective remedy has been a germicidal atmosphere, which alone can reach the seat of septic exudation.

Of usual methods of treatment, gargles of various antiseptics and remedies of the same nature given internally have been most common. More recently sprays have been employed, and superheated vapor, from 113° to 122° F., with a view to the establishment of an abundant suppuration, with detachment of the membrane as soon as possible. These methods are in the right direction and to a degree efficacious, but they do not sufficiently fulfil the germicidal purpose demanded, and their inefficiency in grave cases is the experience of all in treating children. The influence of sprays and gargles in combating the destructive metamorphosis in the naso-pharynx, in the case of those under five years of age and even with much older subjects, must be exceedingly limited, and our inability to control, by means of them, the necrotic process that is steadily progressing beyond our reach, is the cause of systemic poisoning and the comparatively large mortality in early life. It is clear, if it is our purpose to relegate diphtheria to the class of benign diseases, that some method of treatment must be adopted that shall act positively and effectively as an antiseptic over and throughout the laryngeal and naso-pharyngeal cavities. Such a

[1] Ziemssen, vol. i., p. 577.

process must involve the saturation of the atmosphere of the sick-room or ward with a vapor that is thoroughly antiseptic, and at the same time so non-irritant to the air-passages that it may be maintained continuously for an indefinite period, or until the disease has been thoroughly eradicated and systemic poisoning averted.

It is my belief that such a method of treatment is found in the combined vapors of tar and turpentine, under certain limitations in respect of the number of cubic feet of air-space and the degree of atmospheric saturation to which the patient should be subjected, consideration being had also to the severity of the attack, a marked tendency to general sepsis demanding a higher degree of saturation and *vice versâ*. This plan of treatment I adopted some three years since, my attention having been directed to its efficacy as applied during the stage of softening in pulmonary tuberculosis, and it affords me great satisfaction to be able to state here that all cases of diphtheria treated by this method from their inception, to the number of twenty-three, with one exception recovered completely within from five to twelve days after the inauguration of the treatment, and that without subjective complications. In the single case, to which I was called in consultation on the sixth day of the disease, the treatment failed by reason of general systemic poisoning having supervened. In all of the cases referred to, well-marked false membranes covered the tonsils, posterior and naso-pharyngeal cavities; in two invading the larynx and vocal cords. In one of these, on examination, there seemed to be little hope of averting a fatal issue; the tonsils, posterior, pharyngeal, and palatal mucous membranes being covered with a dirty grayish coating of false membrane and a pronounced croupous cough, giving evidence of laryngeal invasion; in fact, a degree of systemic poisoning had already supervened, as evidenced by a temperature of 104° F., accompanied by a moderate expression of dyspnœa. Vaporization of the sick-room was at once inaugurated to the highest degree of saturation the patient was capable of bearing (105° F.), and a thoroughly qualified nurse placed in charge with orders to maintain the vaporization at that standard until otherwise directed. The stridulous cough continued, but the temperature gradually fell, and on the fourth day the sloughs on the tonsils had disappeared, leaving healthy granulation tissue beneath, but pain in one ear with deafness showed that the Eustachian tube was involved. Hoarseness disappeared at the beginning of the second week, and aside

from a moderate deafness in one ear the child returned to perfect health after one of the most severe attacks of diphtheria that falls to the lot of the practitioner. There can be no question that its recovery was due to the use of the combined vapor of tar and turpentine.

In the application of this plan of treatment the requirements are: First, a kerosene or gas-stove, removable to any part of the sick-room or ward at pleasure; second, a sufficient quantity of North Carolina tar and spirits of turpentine; third, an ordinary porcelain-lined iron kettle, of the same dimensions as to circumference as the burner. The treatment has usually been inaugurated with from a pint to a quart each of tar and turpentine if the utensils are of small or medium size, otherwise double the quantity, the kettle to be kept one-quarter full while in use; the degree of saturation of the atmosphere of the room to be regulated by raising or lowering the wicks. While it is found that more than ordinary resolution is required to remain in the sick-room when this vapor is being generated actively during the time necessary for visiting the patient, nurses in constant attendance acquire a remarkable degree of tolerance, and the patient, in all my experience, has never made the slightest complaint, though some were subjected to its influence for from seven to twelve days continuously.

Observation of the therapeusis of this method of treatment shows that within twenty-four hours the diphtheritic patches on the tonsils or posterior pharyngeal wall become loosened at the edges and contracted, a slow suppurative process being established in the submucous tissues. The temperature of the room having ranged between 103° and 105° F., should at this stage be reduced to 100°, much depending, however, upon the judgment of the nurse in the absence of the attending physician; with a nurse without experience in this method the medical attendant must establish the standard of saturation. Oertel states that patients with this disease can bear the vapor of boiling water medicated with lime at a temperature of 117° to 122° F., this being the therapeutic agent he specially recommends. No such high temperature is required to secure the prompt and effective removal of diphtheritic exudation from any of the air-passages by the method herein prescribed.

It must be clearly understood that the success of this method depends largely upon its adoption at the earliest possible period after the inception of the disease, as it may be stated positively, from per-

sonal experience, that it will avail nothing after the establishment of general systemic poisoning.

Individual experience in the treatment of diphtheria by this method will surely afford to all who adopt it a sense of profound satisfaction and mental relief, that will certainly come from a feeling of assurance of success in every case of the disease seen sufficiently early for it to be effective, and especially in respect to children under six years of age, who may become the subjects of this most fatal of septic diseases.

DISCUSSION.

Dr. Simon Baruch, of New York: I am very glad to have the indorsement of the author of the views which I expressed before the New York Academy of Medicine some years ago on the value of turpentine in diphtheria. While I do not go so far as the reader of the paper and consider it a panacea, yet I think it is perhaps the most valuable remedy that we have. My plan, however, was to give the turpentine internally, a drachm once a day. Thus introduced it seems sufficient to saturate the system, and is easily recognized in the secretions. The first question asked, whenever I speak of it is, Will it cause strangury? It has not in any of my cases.

XL. A Case of Pneumo-hydrothorax.

By EUGENE BEACH, M.D.,
GLOVERSVILLE.

Sometime in the spring of 1891 a man, aged eighteen years, presented himself with the symptoms of an ordinary cold of recent development, the principal of which were cough and hoarseness. By occupation he was a baker. His family history was good, except that a maternal uncle died of consumption. He had always been healthy, except an attack of intermitting fever, from which he suffered a few years previously while residing at Castleton, on the Hudson. The cough and hoarseness did not yield to treatment, but continued to be troublesome and suggestive symptoms.

At the time mentioned, examination yielded no physical signs of phthisis. Sometime in June, after going into the water when warm, he had a considerable hemorrhage, which evidently was of pulmonary origin. Although at this time no physical signs of it could be made out, the diagnosis of incipient phthisis was hazarded, and the patient was advised to give up his indoor employment, go into the country, and live out of doors. The hemor-

rhage did not recur, but after some weeks in the country, chills followed by fever and sweating came on. These were regarded as a renewal of the intermitting fever from which he had formerly suffered, and were controlled by quinine. The next unfavorable symptom which manifested itself was night-sweating, which continued. This was soon followed by elevation of temperature in the after part of the day. During all the time, up to the final illness, the appetite continued excellent, and there was no loss of weight.

On the 14th of November, an examination revealed slight dulness over a limited area at the top of the left side in front, and respiration was observed to be considerably accelerated. At this time it was also seen that the left side of the thorax was fuller than the right, the intercostal spaces being partially obliterated, but the significance of this condition was not then appreciated. The patient was not again seen until the night of the 17th of November, when he was found suffering severe pain in the left side in the region of the heart, breathing very rapidly, and with a temperature of 103°. The pain was relieved with morphine. On examination, inspection showed great enlargement of the left side of the thorax, with the intercostal spaces bulging. Motion was absent on the left side and exaggerated on the right. Palpation revealed no vocal fremitus on the left side, and the apex-beat of the heart was found far over to the right side of the sternum. Percussion yielded exaggerated resonance over the whole of the left side anteriorly and posteriorly, except a limited space at the base, very slightly affected by change of position. By auscultation, entire absence of respiratory sounds was found on the affected side; over the lower portion of the scapula metallic tinkling was distinctly heard, and the splashing sound on succussion was developed the next day. On the unaffected side, vesicular breathing was exaggerated.

The patient made no improvement. The respiration and pulse continued frequent and the temperature high. Pain was not severe, and was controlled by moderate doses of opium. The most troublesome symptoms were cough and difficult breathing. Decubitus was most comfortable on the affected side. Repeated examinations failed to show any considerable accumulation of fluid in the thoracic cavity. Except for the undoubted splashing produced by succussion, the evidence of any fluid would have been doubtful. Death occurred quite suddenly, without especial warning, on the morning of December 1st, the eighteenth day from the time when accelerated breathing and enlargement of the side were first observed.

It may be questioned whether the dulness on percussion found at the top of the left side on November 14th was due to lung solidified by tubercular deposit, or compressed by air which, no doubt, had at that time escaped into the pleural cavity. My own opinion is, that the dulness was due to compression of the lung by air.

The severe pain came on November 18th. This, no doubt, marked the beginning of the pleuritis, probably caused by the presence of air in the pleural cavity. The case is interesting as an

illustration of the manner in which an unusual and unexpected pathological process may bring about a sudden termination in the early stages of tuberculosis.

The chills occurred long before the evidence of air in the cavity.

XLI. Report of a Peculiar Case of Chronic Ascending Poliomyelitis Anterior.

By CHARLES E. LOCKWOOD, M.D.,
NEW YORK.

Mrs. A., white, aged forty-six years, born in Ireland. Family history: Father died of old age; mother died of cancer of the breast, aged sixty-six years; three sisters and one brother living and well; one sister died of consumption, aged twenty-two years.

Personal history. Never seriously ill; has suffered somewhat at times from malaria. In the spring of 1889 she had a sharp, burning, shooting pain in the right foot, but did not consult a physician in regard to it. She spent the summer of 1889 in Saratoga, and thinks the place where she lived was damp. No history of gout, rheumatism, or syphilis. On September 1, 1889, she stumbled over a chair, bruising her right shin slightly, and a few days afterward noticed that she was unable to walk as well as formerly. The trouble persisting, she consulted me February 6, 1890, complaining of a peculiar heaviness and weakness of the right leg and foot in walking, and of a diminution of temperature in these parts. On examination, I discovered marked weakness of the flexors of the foot and the extensors of the toes. The right leg and foot felt colder to the touch than the left; atrophy of the anterior tibial muscles was not marked. There was no pain, no sensory, rectal, or bladder disturbance. Tendon reflex at the right knee was present. There was diminished electro-muscular excitability to the induced current, and the normal formula was practically unchanged as far as galvanism was concerned. Here, then, was a case characterized by a marked loss of power in the group of muscles supplied by the anterior tibial nerve, coming on insidiously and gradually, with no premonitory symptom except the shooting, burning pain in the right foot noticed during the preceding spring. No appreciable atrophy, no sensory, bladder, or rectal disturbance. Tendon reflex at the knee intact; reaction to the faradic current diminished, and to galvanic unaltered. The temperature of the affected limb lower subjectively and objectively, and this condition connected in its apparent commencement with a local injury in the mind of the patient, who otherwise appeared to be in a good state of health. Was the affection central or peripheral? I was unable to decide, and asked Dr. Allan McLane Hamilton to see the case. He expressed the opinion that the trouble was not central, advised the application of the actual cautery over the peroneal nerve near the outer tendon of

the biceps muscle, the hypodermic injection of the paralyzed muscles with $\frac{1}{60}$ grain of strychnine daily, massage, and the daily application of the faradic current. In the way of medication, fifteen grains of salicylate of soda three times a day and two teaspoonfuls of Fellows' hypophosphites with meals. Prognosis was that the patient would eventually recover, but convalescence would be tedious. Such was the treatment pursued, without improvement, until March 31, 1890, when, while going into church, the patient's right leg gave way and she fell, bruising her face severely.

On April 1, 1890, my patient was seen by Dr. M. Allen Starr, who found paralysis of the anterior tibial group of muscles of the right leg, atrophy and the reaction of degeneration, loss of faradic action and change in the galvanic reaction, with the knee-jerk still preserved.

Diagnosis was degeneration of the nerve with impaired sensation and motion: said it would take one year to recover, and recommended the use of the continued and interrupted galvanic currents—one pole over the sciatic nerve and the other over the anterior tibial muscles—two or three times a week, massage, and the wearing of a shoe with a piece of iron in the sole connected with an upright piece fastened to the leg by a leather band to prevent foot-drop. About the middle of April, the patient complained of a sharp, shooting pain in the left foot, the same in character as that felt in the right foot one year before, and further treatment was prevented by her departure to the country for the summer. On her return, in October, 1890, examination by Dr. M. Allen Starr and myself showed complete paralysis of the entire right leg, with reaction of degeneration, loss of power and electrical contractility of the anterior tibial muscles of the left leg, and atrophy and loss of power of the thenar and hypothenar muscles of the right hand, with fibrillary twitchings and diminished faradic excitability. A diagnosis was now made of chronic ascending poliomyelitis, anterior lesion having given effects first in the peroneal muscles of the right leg.

The treatment decided upon was ten drops of Thompson's solution of phosphorus, after meals, for two weeks, and then $\frac{1}{60}$ grain of strychnine and $\frac{1}{30}$ grain of arsenious acid three times a day for two weeks, and then used afterward alternately for two weeks. The application of a faradic current to the affected muscles one-half hour daily, massage and dry cups to the spine weekly. This treatment was followed for about a month, when patient showing no improvement, but gradually growing worse, her friends were anxious to have another opinion on the case, and Dr. G. M. Hammond saw her and concurred in the diagnosis of chronic anterior poliomyelitis. He was able at that time, over one year from the commencement of the disease, to obtain slight tendon reflex on the right knee, better, and fair on the left knee; found sensation good; atrophy of muscles on inner sides of lower parts of thighs; atrophy of legs not marked; gastrocnemii contracted. Dr. Hammond gave a favorable prognosis; he thought the patient could be cured, but it would take a long time. He advised the use of the fluid extract of ergot, one teaspoonful three times a day after meals, to prevent congestion of the cord, and iodide of potash, commencing with ten grains, well diluted, three times a day after eating, and increasing the dose daily by one grain until the dose of sixty grains three times a day was reached, to

prevent the formation of connective tissue, and the use of the galvanic current on the affected muscles daily.

The patient at this time was placed under the care of Dr. Hammond, and he informs me that she subsequently died at the Post-Graduate Hospital, about two years after the commencement of the disease, from the extension of the degeneration upward until the medulla was reached and the cardiac and respiratory centres implicated. About a week before she died she began to complain of shortness of breath; there was also a slight degree of cardiac irregularity. These symptoms were intermittent. At the end of the week she suddenly had an attack of cardiac and respiratory paralysis; she was treated by hypodermic injections of strophanthus, digitalis, and whiskey, and rallied. In about two hours she had another attack; remedies were unavailing, and she died.

A post-mortem examination was made by Dr. G. M. Hammond, and sections of the spinal cord from the dorsal and upper lumbar regions made for microscopic examination by Dr. Edward K. Dunham of the Carnegie Laboratory, who describes the conditions found as follows: "In sections of the spinal cord which you submitted to me for microscopic examination, the posterior columns of the white matter appear normal. In the crossed pyramidal tracts on both sides the number of nerve-fibres is decreased and the amount of interstitial tissue increased—descending degeneration. The number of nerve-fibres in the rest of the antero-lateral columns of the white substance also appears to be diminished, with an increase of interstitial tissue; but the amount of change is not as great as in the crossed pyramidal tracts.

"In the gray matter the walls of the bloodvessels are considerably thickened, and I have thought that some of the nerve-cells in the anterior cornua were atrophied, but there are so few normally present in this portion of the cord (dorsal and upper lumbar) that I have not been able to satisfy myself upon this point. The examination of other portions of the cord would be of interest as showing whether the changes in the antero-lateral columns of the white matter were a part of a disseminated sclerosis, and also the cause of the descending degeneration in the crossed pyramidal tracts."

March 1, 1892. Since the above was written, Dr. G. M. Hammond has made sections and microscopic examination of other portions of the spinal cord, and has kindly furnished the following description of the conditions found: "Sections of the lower medulla show the hypoglossal nucleus to be normal. The motor cells of the pneumogastric nucleus are atrophied, also the spinal accessory cells. Respiratory bundle just beneath the pneumogastric centre shows slight evidence of sclerosis. Anterior pyramids show slight sclerosis. All else seems normal. The cervical cord shows the same lesions as those found in the dorsal and upper lumbar portions heretofore described.

The points of special interest in this case seem to me to be:

1. The rarity of this form of disease, Erb having stated in 1876 that only two reports of post-mortems were then on record.

2. That the apparent commencement of the disease seemed to be associated with a local injury, thus suggesting a peripheral cause for the paralysis.

3 The difficulty experienced in making an early diagnosis, owing to the fact that *those muscles only* of the right leg were primarily affected which were supplied by the anterior tibial nerve, thus seeming to point to a peripheral lesion.

4. The slow progress of the disease upward—its effects for six months being confined to the anterior tibial group of muscles, and its entire progress occupying two years.

5. The advisability of taking into consideration the possibility of the existence of chronic anterior poliomyelitis in a slowly progressing motor paralysis of a group of muscles supplied by a single nerve with no sensory disturbances.

6. The impossibility of distinguishing between a central and a peripheral cause, while the effects of the disease were manifested in the peroneal muscles only, by means of the electrical reactions, as the reaction of degeneration might be present in both instances.

7. The possibility that the trouble may have been primarily peripheral and secondarily central.

8. The persistence of the cathode closure contraction to the last, as observed by Dr. Hammond.

9. The identity of this case with those described by Charcot, Marie, and Tooth as the peroneal type of progressive muscular atrophies, concerning which Dr. Putzel, in *Wood's Reference Handbook of the Medical Sciences*, says: "Hardly anything is known concerning the pathological anatomy of the peroneal type of progressive muscular atrophies. Charcot and Marie suggest that it is the result of peripheral neuritis, and in three cases interstitial neuritis was found on autopsy. It must be admitted, however, that our knowledge of this affection is too imperfect to warrant us, for the present, in drawing any conclusions with regard to its pathology and pathological anatomy." And, under the heading of its pathology, he remarks: "The nature of the lesion in the peroneal type of muscular atrophy must be left for future investigations. We may say, however, that the strong hereditary element and the clinical history seem to indicate a peripheral rather than a central origin."

DISCUSSION.

Dr. A. Jacobi, of New York: My remarks will be confined to the therapeutics of this disease. Ergot, it seems, was recommended in that case after it had lasted a long time, after the condition had ceased to be one of hyperæmia and congestion, and had become one of atrophy in certain parts of the cord. At this period, ergot was not the proper thing to give. As far as phosphorus and strychnine are concerned I certainly would have given them also, but in much larger doses. Three doses of phosphorus a day, amounting in all to one-fiftieth of a grain, is a very small amount for a disease of that severity. Even the one-fiftieth of a grain of strychnine, introduced hypodermically once a day, is valueless in this class of cases. I commence in adults with one-thirtieth of a grain and increase the amount until some effect is produced, attaining to one-twentieth, one-sixteenth, one-eighth, and in one instance to one-fifth of a grain of sulphate of strychnine, introduced subcutaneously once a day. In one case it was only after this last amount was reached that the man began to feel some stiffness of the muscles of the paralyzed limb. Let us have, then, either no medication or else satisfactory medication.

Dr. J. Leonard Corning, of New York: I suppose that many of us have seen cases which resemble the one delineated. I have, within three weeks, seen one closely resembling the first period of this case. I do not believe that drugs or any other means will do much to arrest central degenerative troubles. I have tried strychnine, electricity, mechanical measures, etc., and have never succeeded in curing the process in a single case.

Dr. E. D. Fisher, of New York: It seems to me that the lesson to be drawn from Dr. Lockwood's case is this: Where a progressive muscular atrophy comes on in this unusual manner, with pain pointing to a peripheral nerve lesion, we cannot during the early stage make a positive localizing diagnosis. I have a case under observation in which the muscular atrophy affects the same group, and also, as in Dr. Lockwood's case, there is a history of injury. In treatment, with Dr. Jacobi, I see no object in giving ergot. I think we owe it to our patients to try strychnine, but we should not promise them that they can be cured. We may also try electricity. The process, however, is a slow one, and while we may relieve our patients to a slight extent, I think the post-mortem findings teach us that we have no right to promise anything approaching a cure. So far as the effect of electricity on the spinal cord is concerned, I doubt whether the current reaches the cord at all.

XLII. Pain: Its Nature, Diagnostic Significance, and Treatment.

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The relief of suffering is the distinctive prerogative of the physician. It is doubtless this ability to bid defiance to pain which, more than any other single attribute, has enabled medical men to maintain, in spite of the vicissitudes of therapeutics, such a high position in the estimation of society. Some of the most famous lights of the profession have in all ages been imbued with this great fact. The neurologist, more especially, should be thoroughly conversant with all matters pertaining to pain, and particularly to the treatment of pain, for there is no single symptom which is liable to be more frequently met with, or whose elimination will make such stringent demands upon the practical resources of the art. I shall offer, therefore, no apology for the following observations on the nature and treatment of pain, which, I trust, may prove of benefit to the physician in solving many of the practical problems of his calling.

Physiology.—The first question which naturally suggests itself is, How do painful impressions reach the higher centres of the brain, or, in other words, along what paths do such impressions travel in their journey from the periphery to the centres of conscious perception?

It is much to be regretted that only a partial answer can be given to this important question. About all we know of it is soon told. In the first place, the transmission of painful sensations from the periphery to the spinal cord is accomplished through the instrumentality of the sensory nerves. The course pursued by such painful impressions through the cord is more obscure. Some physiologists believe that they are transmitted wholly through the gray substance; others, again, assign special importance in this connection to the sensory conducting paths of the posterior columns; while a third class of observers believe that sensations of pain may be transmitted both through the gray substance and the white substance (posterior columns). The attempt to associate the lateral columns with the conduction of sensory impressions must be regarded as premature, to say the least, in the present state of

evidence. As regards the subsequent paths pursued by painful impressions, it may be stated that various facts point to certain of the fibres of the posterior division of the internal capsule as those largely concerned in the transmission of such sensations to the cerebral cortex.

Identity of the Processes in Motor and Sensory Nerves. —It has often been asked, as a matter of theoretic interest, whether the processes accomplished in a motor nerve differ radically from those occurring in a sensory nerve. On this point Radcliffe, in concluding an elaborate article, observes that "there is reason to believe that there is no essential difference between the action which issues in sensation and the action which issues in muscular contraction." As a corollary to this proposition, he adds that "the production of sensation and the production of muscular contraction only differ in this: that the electrical discharge, analogous to that of the torpedo, which is developed in and near the nerve in the state of nervous action, happens to tell upon sensorial ganglionic cells in the one case and upon muscular fibres in the other." Of course, to speak of the electricity evolved during the action of a nerve as that mode of nerve force concerned in the production of sensation or motion is a mistake. In other respects the figure is an apt one.

It may be of interest in this connection to consider the experiments which had led Radcliffe and others to these conclusions. Undoubtedly the researches of Dubois-Reymond and Matteucci have had a powerful influence in shaping opinion on this point. The principal experiment of Dubois-Reymond consists in pouring hot water upon the leg of a frog, the nerve of the same being connected with a galvanometer. When this is done, the galvanometer shows a cessation of the electric current—a phenomenon which is observed almost as soon as the water touches the integument. This observation, in conjunction with the well-known fact that there is also a decrease, amounting sometimes to almost entire absence, of "natural electricity" during the action of motor nerves, led Dubois-Reymond to the inference that in sensitive as well as in motor nerves there is a loss of electricity when the nerves pass from rest into a state of action.

Matteucci's experiment, performed upon a rabbit, consisted in dissecting out the upper portion of the sciatic nerve and irritating it with the galvanic current. When the current was closed the

animal screamed loudly, but when it was opened there was no sign of pain.

The resemblance of the phenomena evoked by the galvanic current in sensitive nerves to those caused by the same agent when applied to motor nerves has led to the inference that "the change in a sensory nerve when sensation is produced by the action of voltaic electricity, and the change in a motor nerve when muscular contraction is produced by the same means," are, as Radcliffe puts it, exact equivalents.

Such, then, are the principal facts which have been assumed to prove the identity of the processes underlying the actions of motor and sensory nerves. While, however, the relation of the two kinds of nerves to the galvanic current points to the truth of this proposition, it is, of course, self-evident that the *final result* of the action differs radically in each kind of nerve. In the case of the motor nerve, action results in contractions, due to the excitation of the contractile substance of the muscle; in the case of the sensory nerve, on the other hand, action is translated into sensation through the instrumentality of the central ganglionic apparatus in the cortex. So much for the fundamental features of the argument.

Inductive Evidence on the Genesis of Pain.—Let us now consider a set of facts which will help us to frame a reasonable hypothesis concerning the nature and genesis of pain. In the first place, it must be remembered that a sensory nerve supplies a certain definite area of the body, and transmits to the brain only such impressions as emanate from the area. In other words, there is no physiological anastomosis, however much the fibres may interlace or run together. To prove this, it is only necessary to divide a sensory nerve and irritate its distal end, when we find that no sensation is perceived, thus demonstrating that there is no collateral communication whatsoever. As a matter of course, irritation of the proximal or central portion of the nerve—that part which is in connection with the nervous centres—gives rise to distinct sensation.

In the same way, if we divide the spinal cord of an animal transversely, so as to sever the sensory conducting paths, and irritate the nerves which join the cord below the incision, no sensation will be perceived; but if we stimulate the nerves which enter the cord above the incision, we shall have every evidence that the sensation has been perceived. Precisely the same sort of phenomena may be

observed in human beings who, by reason of injury or disease, have suffered a solution of the sensory conducting paths of the cord.

Another important fact is that an impression made upon any point in the course of a sensory nerve may be perceived by the mind as though it were made not only upon the point in question, but also upon the parts to which the fibres of the nerve are distributed. We have, therefore, under such circumstances, precisely the same effect as if the irritation were applied to the regions supplied by the branches of the nerve.

An explanation is thus afforded of the fact that when the sensibility of a part is abolished by compression or division of the nerve which supplies it, irritations of the central portion may still give rise to sensations which are felt as though they emanated from the parts below the point of interruption—*i.e.*, from the parts to which the peripheral terminations of the nerve are distributed. Thus, when a nerve is divided for the cure of an intractable form of neuralgia, it sometimes happens that pain still persists. This is undoubtedly due to the fact that the division of the nerve has not been made near enough to the nervous centres to include the entire affected portion, and hence the continued irritation of the central portion causes pain, which, in accordance with the law under consideration, is felt as though it emanated from the peripheral parts of the nerve. Another illustration of the same thing is afforded by those paralyses in which the limbs are quite insensible to such external stimuli as pricking, pinching, and burning, and yet are believed by the patient to be the seat of severe pain. Still another example of erroneously referred pains is afforded by persons who have suffered amputation of a limb. When the divided nerves of the stump are inflamed, or otherwise irritated, nothing is more common than to hear the subject complain that he experiences pain which appears to be located in the part of the limb which has been removed.

Such facts as these might, on a superficial examination, lead one to suppose that there was little or no benefit to be anticipated from local therapeutic measures addressed to the affected nerve itself in cases of pain. It must be remembered, however, that by the aid of chemicals we are in many cases able not only to temporarily cut off the peripheral portion of an affected nerve from its central connections, but also to modify the abnormal condition of the nerve itself, thus effecting an abolition of pain which is often permanent. Pain

due to rheumatic causes is commonly amenable to local measures, while that associated with certain forms of well-developed neuritis offers a less favorable field for this class of remedies.

Definitions of Pain.—Various attempts have been made to define pain. Cicero looked upon it as a disagreeable movement within the body, independent of the senses. According to others, it is a species of sensation which may emanate from both internal and external regions of the body, in which are distributed nerves whose office it is to transmit to the brain all impressions which they receive. Lauvage calls it a disagreeable perception originating from any lesion of the nerve fibres; Gabius regards it as a sensation which the mind would rather not experience (!), while Bilon is discontented with all definitions, and believes the word pain to be so universally descriptive in itself as to enable one to dispense with all definitions.[1] More recent authors have, nevertheless, still persisted in further attempts to define it. Thus Valentin[2] perceives in pain "sensory impressions which, on account of their too great intensity, become disagreeable;" Wundt[3] calls it "a feeling that accompanies all powerful or intense stimuli," while Eulenburg[4] defines it as "a gradual increase of the feeling that accompanies every sensory process."

To my mind, the views of Erb[5] regarding the nature of pain are the most comprehensive and just which have been recently expressed. "We hold," he says, "that every increase of ordinary sensory stimuli is capable of producing pain as soon as it attains a certain intensity. Every excitation the intensity of which exceeds certain limits, every molecular change of the centripetal series induced by an abnormally strong stimulus, is perceived as pain. Very simple experiments—as, for example, pressure or temperature gradually increased until pain is produced—show that with very gradual increase in the strength of the stimulus a limit is at length reached beyond which the excitory process is accompanied by pain, yet no sharp line of demarkation can be traced defining the point at which the sensation of pressure and temperature ceases and the sen-

[1] Dictionnaire des Sciences Médicales, vol. x. p. 179, Paris, 1814.

[2] Physiologische Pathologie der Nerven, vol. i. p. 240.

[3] Lehrbuch der Physiologie des Menschen, pp. 503, 1074.

[4] Functionelle Nervenkrankheiten, p. 31. Vide also "Diseases of the Peripheral Cerebro-spinal Nerves," by Wilhelm Heinrich Erb. Von Ziemssen's Encyclopædia, vol. xi. p. 14.

[5] Op. et loc. cit.

sation of pain commences. The simplest explanation accordingly seems to be that pain is the reaction of the sensorium to a certain degree of excitation, and we at present see no ground for regarding pathological pain as being essentially different in origin from that which can be produced by simple physiological experiment."

We thus find a clew to the genesis not only of those pains which originate in over-stimulation of the nerves of common sensation, with which we are most frequently called upon to deal, but of those, likewise, which have their origin in an exaggerated stimulation of the nerves of special sense. For do we not know that intense light and loud, inharmonious noises produce sensations which are described by those subjected to them as veritable pains?

As regards the nature of those fine molecular perturbations originating in the nerve and transmitted thence to the sensorium—perturbations which are evidently the essential accompaniment of pain—we are still, and doubtless are destined in the future to remain—entirely in the dark. Although we are thus debarred, on account of the crudity of our physiology, from penetrating the ultimate mystery of pain, we are, nevertheless, enabled to adopt proper means for the arrest of the morbid irritation in the nerve, when once established. As the argument proceeds, we shall find that in combating pain we are compelled to invoke the aid of a wide range of agents; and thus it happens that chemistry, thermodynamics, physics, and even surgery, have all rendered important assistance.

Finally, we must not forget to mention a very recent theory regarding the mechanism underlying the pains found along the course of nerves. According to Prus,[1] who is the promulgator of this theory, there are filaments in the sheaths of nerve trunks the irritation of which gives rise to the painful points found in neuralgic affections. These filaments, the presence of which was made known by careful microscopical examination, have received the somewhat ponderous appellation of *nervi nervorum peripericorum.* It is, of course, impossible at present to prophesy with any degree of certainty what part these structures are destined to play in the physiology and pathology of the future. Perhaps autopsies conducted with a special view to our enlightenment on this point may

[1] Archives des Élèves de Biologie, iv., September 2, 1892. See also, Brain, vol. x. p. 557.

afford information; but it is hardly to be anticipated that we shall derive much help from experimentation.

It now remains to say something in regard to the causation of pain. It may be stated at once in this connection, that by far the most prolific source of the perverted sensation is found in the condition of the nerve known as neuritis. The two principal types of neuritis are simple neuritis and multiple neuritis. Under the last-named heading are comprised the conditions known as alcoholic neuritis, neuritis of leprosy, and that of beri-beri; the two last-named conditions are so rare in this country as to merit rather a pathological than a clinical interest. Simple neuritis and multiple neuritis, on the contrary, are exceedingly important phases of the affection, since they are of frequent occurrence, both in hospital, special, and general practice. As its name implies, simple neuritis is simply a local manifestation of the disease, the inflammatory process being restricted to one or more nerve stems.

The most frequent causes of this form of neuritis are wounds, inflammatory conditions in the vicinity of the nerve stems, rheumatic influences culminating in thickening of the sheath, and tumors pressing upon the nerves. Severe compression of the nerve, caries of the neighboring bones, and bruises may also give rise to it. To sum up the whole question of etiology, it may be stated that the restricted form of neuritis is more apt to be due to local than general causes, while of multiple or general neural inflammations the reverse is true; for toxic agents, acting more or less extensively throughout the organism, play a prominent part in their causation.

In multiple neuritis, as previously noted, we have to do with a symmetrical and more or less widely disseminated inflammation or degeneration of the sensory or motor nerves. As a rule, the cerebral or bulbar nerves are little or but slightly affected. Since Dumenil published his excellent paper in 1864 a multitude of observers in this field have come forward; and, indeed, hardly a year goes by without witnessing extensive additions to the literature of the subject. At the present time the available material is quite overwhelming, so that detailed reference to it would, in a short paper of this kind, only serve to add confusion to a subject already sufficiently intricate. I shall confine myself, therefore, to the most general observations. Let me begin with a few words in reference to the etiology of multiple neuritis. As has already been

said, the most common causes of multiple neuritis are toxic and infectious agents. In this category belong lead, alcohol, illuminating gas, bisulphide of carbon, arsenic, aniline, dinitro-benzine, phosphorus, mercury, morphine, ergot; and among animal and endogenous poisons of various kinds, fevers, diphtheria, tuberculosis, beri-beri, leprosy, malaria, gout, rheumatism, diabetes, and the puerperal condition. In addition to these, dyscrasic states undoubtedly play a part in the evolution of certain phases of the disease.

Here we have the explanation of those cases of neuritis which occur in the course of affections involving more or less impairment of the physiological integrity of the blood-stream — marasmus, chlorosis, and cancer.

A large proportion of cases begin acutely, a small number develop more gradually, while a third class displays great lethargy in the evolution of the different symptoms.

Hence it is customary in some of the books to describe an acute, a subacute, and a chronic form of the disease. The general symptoms of multiple neuritis are about as follows: In a large proportion of cases the symptoms begin abruptly. It is true that the patient may complain for some days of vague feelings of malaise and weakness in the lower limbs, but these sensations commonly excite little or no attention, and not until more definite symptoms are added is medical aid invoked. At this time he suffers from vague discomfort in the head, loss of appetite, and mental hebetude, and he may even be delirious. There may also be considerable fever, the temperature reaching 101° or even 105°, while the pulse is correspondingly accelerated. Sometimes, however, the evolution of the symptoms, even in the beginning, is more gradual, and it is then quite difficult to predict what is really impending. Whatever phase these premonitory phenomena may assume, however, they are certain, or almost certain, to be speedily followed by symptoms of sensory irritation. The subject complains of tingling, numbness, crawling sensations, and pain. These symptoms are specially pronounced in the affected limbs, but they evince, as may readily be imagined, a decided predilection for the regions in the vicinity of the nerves. While sensory irritation is apparent from the beginning, the opposite condition of sensory paralysis is by no means so obvious. It is true that the muscular sense may be so impaired as to give rise to pronounced ataxia; the tactile nerves, too, may be

more or less affected, and the transmission of sensations of heat and cold, as well as those of pain, may be considerably retarded. Still, it must be borne in mind that when the sensations reach the central perceptive mechanism they possess considerable vigor, and are, therefore, felt with great distinctness. Complete anæsthesia, then, is decidedly exceptional. The distribution of these paræsthesiæ is a matter of some interest. Sometimes they are associated with the ramifications of a particular nerve, while at others they are distributed in irregular islands without obvious physiological connection; or, finally, they may pervade the entire limb. In any event, their presence is significant and often of the first importance in forming a correct diagnosis.

The pains, too, when taken in conjunction with the other features of the case, are of value in forming an opinion as to the nature of the disease. Though somewhat like those of locomotor ataxia, they differ notably in this: that whereas in multiple neuritis the pains are readily evoked by pressure upon the nerves, this is not usually the case in ataxia. With the advent of these pains there is sometimes more or less œdema, profuse diaphoresis, or swelling of the joints; this is specially true of the epidemic variety of neuritis. The last-named symptom has frequently caused the case to be mistaken for acute articular rheumatism.

Not less important than the sensory symptoms are the derangements of motility. The latter, unlike the former, are non-irritant in type, paralysis of motion being the rule, while spasms are rare. In the majority of cases the paralysis begins first in one leg, speedily involves the other, and may advance thence to one or both arms. As a rule, the invasion is rapid, the loss of power beginning as a simple sensation of weakness on standing or walking, and culminating in more or less complete paralysis in fifteen or eighteen days. The distribution of the paralysis presents some points of interest. In the first place, it is a remarkable fact that the muscles which actuate the small joints of the hands and feet and the wrists and ankles are much more affected than those of the elbows and knees. Thus, in a case which I recently saw in consultation with Dr. Haines, of Newark, the patient, a man of sixty, who was a sufferer from multiple neuritis of malarial origin, was able to move both elbows and knees without difficulty, while voluntary motion in the wrists and ankles was quite impossible. Another interesting point is, that the paralysis shows quite an irregular distribution at

first, but assumes the characteristic form when fully developed. I emphasize this point because on seeing the case at the commencement of the paralytic invasion one is apt to be puzzled unless forewarned of the erratic character of the symptoms. Such, then, is the more common course of general neuritis—a course which, as previously intimated, is subject to considerable variation. Time does not, however, permit our consideration of the erratic types of the disease.

Simple Neuritis.—The duration and course of simple neuritis are subject to a certain degree of variation. Usually, however, the onset is quite abrupt, although a gradual beginning is occasionally observed. Moreover, an initiatory chill and fever occur in some cases, but the majority begin without these warnings.

Whatever the precise mode of onset may chance to be, the first symptom to excite the apprehension is the pain. This pain is usually severe, and is felt more or less throughout the distribution of the affected nerve. On applying gentle pressure along the course of the nerve, the latter is found to be extremely sensitive; and after the trouble has lasted a certain amount of time, it is often possible to feel the nerve (which has become considerably thickened) through the integument. Though the pain is more or less persistent, it sometimes abates, but only to return again with renewed intensity. I have under my care at this time a patient in whom the intermittent and severe type of neuritic pain is well illustrated. The patient, a lady of remarkable intellectual gifts, was recently referred to me by Dr. M. S. Ayers, of Fairview.

Disturbances of sensibility and motility also occur in the simple form of neuritis, as well as in the more general type of the affection. Tingling, numbness, and a moderate degree of anæsthesia are observed in cases of medium severity, while in those characterized by more profound and permanent changes in the nerve the anæsthesia may be intense.

The motor derangements are sometimes merely of moderate extent, so that nothing more may be complained of than slight weakness; but when the mischief is more serious, conduction is abolished, the implicated muscles are paralyzed and atrophy more or less extensively. If an examination be made by the aid of the electrical current at this time, the muscles will be found to exhibit the characteristic reaction of degeneration.

Finally, more or less extensive changes in the skin have been

observed in a certain number of cases. The most common are vascular and herpetic eruptions; both the hair and nails may be involved, the former becoming brittle and the latter stubby.

Pathology.—When the course of the disease is acute the pathological changes are proportionately vehement. The affected nerve is seen to be reddened, swelled, and thickened; its vessels are distended and intensely hyperæmic, to which circumstance the lividity is due; there is a transudation of cellular elements and fluid from the engorged vessels into the interstitial tissue and nerve-sheaths, and, in short, we have a typical picture of acute inflammation. On examining the condition of the nerve fibres more closely, by the aid of good lenses, we find that the destructive process is by no means as far advanced in some as in others. In those which present the most marked changes the axis-cylinder is completely obliterated, the medullary substance undergoes fatty or granular degeneration, and the sheaths themselves are more or less completely disintegrated. At last, the disorganized remnants may be more or less completely absorbed, and then nothing remains behind but the empty sheaths. This, as previously mentioned, is the course of events in the more severe cases; in those of a milder type, however, the changes are less far-reaching, nothing more than moderate swelling of the sheath and granulation of the medullary substance being discoverable.

It is, moreover, worthy of note that cases which begin in a chronic manner do not present the primary stage of engorgement of the vessels and fluid and cellular infiltration. It has already been noted, in the clinical portion of this chapter, that some cases of a severer type get well without loss of motility, provided the muscular atrophy has not been too extensive. This fact presupposes that the regenerative capacity of the nerves is prodigious. Considerable difference of opinion exists among pathologists as to the manner in which this restoration of the nerve filaments takes place. Of late, however, two theories have chiefly claimed attention; according to the one, new axis-cylinders are evolved and prolonged from those which have escaped the ravages of the inflammation, while the other affirms that the young nerve fibres are derived "from an endogenous growth of nuclei within Schwann's sheath." Benets and Newman are adherents of this hypothesis.

In connection with the traumatic varieties of neuritis, the facts bearing on the regeneration of divided nerves are most interesting;

for, from what has been learned, both experimentally and in the clinic, it is certain that more or less perfect union and restoration of function may be obtained in nerves thus mutilated.

Gluck found, in the course of a series of experiments on fowls, that the excision of a piece of nerve was not followed by restoration of function, but that, after simple division, such restoration readily took place when the ends were carefully coaptated. This renewal of conduction was, moreover, established with marvellous rapidity —in two instances in twenty-four hours. As a rule, however, when the sciatic was divided and the ends subsequently joined with sutures, paralysis of the muscles supplied by the nerve persisted for fifty hours. After the lapse of this interval there was a gradual resumption of motion in the affected muscles, more or less complete recovery taking place in about four days.

Waller and Vaulair believe that the regeneration takes place from the central portion of the divided nerve, and that the peripheral end degenerates. Tizzoni, on the other hand, holds that the degeneration affects both ends of the nerve at the point of incision.

Eichhorst and Wagner maintain that the reorganization takes place from the nerve fibres on both sides of the incision, the new connecting fibres being derived from the axis-cylinders.

Ranvier has indicated the important part played by the mechanical support of the tissues in maintaining the physiological distribution of regenerated nerves.

Lastly, Paget has found that, after division of the median nerve, sensation began to appear in the regions supplied by it within two weeks. Recovery was practically complete in about four weeks. As has already been said, the nature of the divided nerve favors cicatrization and regeneration of the peripheral ends, and hence the frequency and success with which the process has been resorted to by modern surgeons.

From the foregoing data it is evident that considerable difference of opinion exists among pathologists regarding the remarkable series of events which culminate in the restoration of function in a nerve previously injured either by the knife or the inroads of active inflammation. Nevertheless, many of the phenomena observed are exceedingly suggestive, and it is, moreover, highly probable that some at least of the points in dispute will be definitely settled in the near future.

The Treatment of Pain.—From what has already been said regarding the causation and conduction of painful sensations, it is evident that a wide range of remedies are applicable in treatment. In the first place, we may address our endeavors to the nerve itself, and strive, by the application of appropriate agents, to arrest the propagation of the painful sensations toward the sensorium; or we may seek to allay the inflammatory conditions in the nerve itself. This we may do by localizing remedies in the painful districts[1] by the application of ointments, by endermic medication, or, when all else fails, by division of the affected nerve-stem.

But the mere alleviation of pain, though eminently worthy, is by no means the ultimate end to be desired. We should strive by every means in our power to effect a permanent cure. From what has been said regarding the causation of neuritis, it is clear that, in a large proportion of cases, the solution of this problem involves nothing less than the elimination from the system of some poisonous influence, such as malaria, lead intoxication, or syphilis, or the correction of some constitutional dyscrasia. Where the cause is found in some organic disease which serves to perpetuate the neuritic condition of the nerve, little can be hoped for from chemical agents of any kind. Under these circumstances we must address ourselves to surgery, that most useful art, which has done so much for the alleviation of human suffering. Unfortunately, as we have said, there are many lesions to the central nervous system which are quite inoperable. In this category belong the sclerotic and degenerative diseases of the brain and spinal cord. The most that we can do in such cases is to seek to render the patient's condition tolerable by the administration of analgesics and opiates. I will merely add, in conclusion, that when these agents have lost their potency, except when given in toxic doses, their physiological influence may be reëstablished by giving them while the patient is exposed to the influence of a condensed atmosphere, as I have recently shown in an article published in the *Medical Record* for August 29, 1891.

The time at my disposal does not admit of an extended reference to the philosophical questions underlying this mode of treatment;

[1] For some of the author's more noteworthy contributions to this field see the New York Medical Journal for December 26, 1891; the Medical Record for March 19, 1887; and A Treatise on Headache and Neuralgia, New York, E. B. Treat, 1888 also subsequent editions).

that has already been done in the article above referred to. I shall therefore merely state that this system of using compressed air in conjunction with drugs is based upon facts which I have succeeded in establishing by researches that fulfil the exigencies of the most exact induction.[1]

From what has previously been said regarding the causation of neuritis, it is evident that anomalous conditions of the renal secretions, or at least some of them, bear a definite causal relation to the genesis of pain. Hence it follows that the correction of renal derangements, in so far as they are remediable, should always be undertaken as soon as they are detected. These observations apply with especial force to lithæmic conditions, which are but too often entirely overlooked.

XLIII. Mental Derangement in Multiple Neuritis.

By EDWARD D. FISHER, M.D.,
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My attention has been called for some time to the mental symptoms in cases of multiple neuritis, especially of alcoholic origin. This was increased by a paper in the *Archiv für Psychiatrie*, 1890, by Korsakow, in which the writer called attention to them, asserting that often the peripheral nerve symptoms were either absent or were secondary in character. Having opportunities of seeing a great number of cases of this class, I have especially noticed the mental picture, and believe that a diagnosis from their presence alone can be made.

While alcohol can be considered the usual cause of the disease, still, in many cases, the previous history does not point to any excess in the use of this poison. Much has been written of late years on multiple neuritis, so that we are familiar with the symptoms of the peripheral nerve lesions. Its usual course being paraplegia, involving first the lower extremities, with exquisite tenderness of the muscles and nerve tracts, wasting and loss of reflexes, then later involving the upper extremities, beginning in the hands

[1] "The Use of Compressed Air in Conjunction with Medicinal Solutions in the Treatment of Nervous and Mental Affections: being a New System of Cerebro-spinal Therapeutics." The Medical Record of August 29, 1891.

in extreme cases, giving the picture of double foot- and wrist-drop, the patient suffering comparatively little pain except on handling the limbs or on motion, if that is possible. In the fatal cases, the respiratory and cardiac muscles are involved. This is the usual description, and a correct one. The mental symptoms have also been referred to, as in Starr's article on this disease, but they have not been prominently brought forward. In the cases I shall record they have been either the most marked symptoms present, or, at least, very prominent. I would not have it inferred that all cases of multiple neuritis, whether alcoholic or otherwise, have mental symptoms, for many, if not the majority, run their course without them. Leaving out the peripheral nerve lesions, the mental symptoms in these cases that I would draw attention to are the following:

The patients have a complete loss of knowledge of the time of the commencement of their illness, or of time as it is passing; weeks or months pass by without their appreciating them. They are unable to tell how they were brought to the hospital, or who brought them, and on their recovery they simply recognize, on being told the fact, that they are in a hospital, but the intervening time is a complete blank. They can give an accurate description of events up to the time when they were taken ill, and that is all. There is a loss, therefore, of all knowledge of time and place. While in some of these cases the disease has immediately followed an excessive debauch, many again have only been moderate drinkers, and this does not, therefore, come under the head of ordinary acute alcoholism. The length of time of this lapse of mental power differs widely from it. I have in some cases observed also marked hallucinations and delusions, but, as I have said, the most marked symptoms are those of loss of memory, of time, and place.

In this connection, I would also remark that in multiple neuritis the most marked peripheral nerve lesion may be noted in the upper extremities, the lower apparently escaping; or, again, no peripheral lesion being observed unless the mental symptoms, as related, have directed especial attention to the examination for them.

The mental symptoms point most decidedly to a brain lesion, and probably in these cases it is the set of association fibres that are chiefly involved. There seems apparently no failure in understanding what is seen or heard, but no memory of it remains, nor does the fact itself call up the usual association of ideas. This condition may last months, a gradual recovery taking place, the patient

recognizing the place he is in and the passage of time. In my experience, however, even when complete recovery has taken place in the peripheral nerve lesion and the mental affection, the period of their illness is never recalled.

Few autopsies have been made. One is referred to in the *Archiv für Psychiatrie*, 1891, which I shall refer to later. The first case I shall relate briefly, and is as follows:

Male, aged fifty-five years, laborer; history of alcoholism and syphilis. Complains of inability to walk and of some weakness in the hands. Is slow in answering questions. On examination he was found to be able to walk fairly well; no marked motor symptoms; no foot-drop; reflexes intact; slight loss of power in hands, but no wrist-drop. He is unable to state how long he has been ill, or how he came to be in the hospital; is unable to name the day of the week; does not complain of pain, but on deep pressure on the median nerve, and on grasping the muscles of the forearm and arm firmly, he complains of pain; no pain elicited in the lower extremities.

I have purposely related the case, first, as one in which the symptoms of the peripheral disease were very insignificant, and would not have been observed at all if the mental symptoms had not called attention to them.

Syphilis and alcoholism being such frequent factors in all cases admitted to the public hospitals, they would not have directed especial attention to the latter as the cause of the disease, while cerebral syphilis, although presenting often loss of memory and perhaps a comatose condition, extending over days and weeks, does not present the loss of time and place without obscuration of consciousness, nor is bilateral multiple neuritis present.

J. R., aged thirty-seven years; occupation, housework; nativity, United States; admitted to the hospital November 1, 1891. Family history negative.

Previous history: Moderate drinker; denies syphilis, and has no appearance of it; married seven years ago; no children; suffered with menorrhagia for three years after marriage. Health was good up to the present attack. When questioned as to when this attack began, she is found to be perfectly ignorant about it. She has no idea when or how it began, or where she was, or where she was treated, or by whom; she does not even know how long since the present illness began. She is rational, but memory impaired. She does not know how or when she came here.

Examination of the limbs shows in the hands no marked atrophy, but a diminution in grip. The little and ring fingers are slightly flexed in the left hand, and the little finger in the right hand. There is no marked wrist-drop. The feet are extended permanently, and the toes flexed bilaterally. Calves of legs show atrophy, with pain when pressure is applied. Unable

to walk. Cutaneous reflexes feeble and slow in the legs; patellar reflex markedly diminished; micturition and defecation normal.

J. H., aged forty years; occupation, housework; nativity, Scotland; admitted to hospital November 1, 1891. Father and mother dead; two sisters in good health.

Previous history: Moderate drinker; denies syphilis; has lived in America four years; has had good health until present illness, which began about six months after landing. She had several attacks six years ago, but they were of brief duration. She is unable to state when she got into this condition; memory impaired; she can talk of things which happened five years ago, but not of daily events. She is unable to state whence or when she came to this place, but she is aware now where she is.

Examination of limbs shows atrophy of muscles of hands; feet extended and toes flexed with marked atrophy of the calves of legs, and painful to pressure; at times, jerking of the legs; yet she seems to have plenty of strength in them. She is unable to walk, however, on account of the condition of the feet. She has not walked any in nearly four years. Cutaneous reflexes are feeble; patellar reflexes diminished; plantar reflexes are about normal. Micturition and defecation are normal.

M. D., aged thirty years; United States; married; domestic; admitted October 30, 1891. Intemperate in habits; has had two children, one living. Physical condition poor; has multiple neuritis. Mentally, is confused, inaccurate, and contradictory; nothing intelligent can be obtained from her. Tongue coated; joints hot and swollen and painful; has profuse perspirations; noisy and excitable at night.

November 5. Admitted to hospital ward; in bed and helpless; muscles of legs and arms atrophied; flexor of feet paralyzed; has spots of cutaneous hyperæsthesia and anæsthesia of various parts of legs and thighs; complains of agonizing pains in thighs when moved. Her memory is very defective, and she has no idea where she is, or how long she has been here. She says she came to the institution last night, and walked all the way from Ninth Avenue; that she came with "Annie" –referring to an attendant, whom she imagines she has known for years—and thinks the "hall doctor" is an old friend. Denies having used intoxicating liquors, but her friends say that she has been drinking to excess for the past three years.

Treatment. Massage and faradic current to paralyzed limbs; strychnine and tonics.

10th. Memory still very defective; says she came here yesterday, this is Johnnie's place, and that she has a room upstairs; a half-hour later, says, "This is New York Hospital, is it not?" "Oh! I guess I am crazy." She is very silly in her manner and actions; not improving physically.

25th. A little brighter mentally; begins to realize where she is, but does not know how long she has been here. Physically, not improved. She complains of great pain in her limbs when moved. Wasting of muscles continues in spite of treatment.

December 25. Out of bed and able to sit up in chair in sitting-room, but cannot use her legs; can help herself readily with her hands, knits occasionally; complains of pain in legs and thighs when moved, and screams

when changed from the bed to her chair. Mentally improved; has a fair knowledge of her previous condition and of her present surroundings, and recognizes those about her. No delusions, illusions, or hallucinations, but is somewhat silly in her actions and demeanor.

January 20th. Coherent in conversation; no physical improvement.

R. R., aged thirty-three years; married; Irish; housewife; six children born, five living. Admitted November 12, 1891. Habits intemperate, not hereditary. Physical condition poor; has multiple neuritis. Mentally, incoherent, confused; has hallucinations of sight and hearing; imagines she sees animals about her in the room; hears voices through the telephone which call her vile names; she becomes excited when these voices are persistent. The attack began about three weeks before admission; the first symptom noticed by her friends was that her memory began to fail; she then became restless, irritable, and excited, and disturbed the neighbors, so that they were obliged to send her away.

November 14. Received in the hospital ward; is helpless and confined to bed; muscles of arms and legs atrophied; flexor muscles of feet paralyzed; sensations delayed; patellar reflexes absent; complains of pains in limbs and back. Liver enlarged; skin and conjunctiva jaundiced; mental condition demented and confused; has illusions regarding the identity of persons about her, and imagines that they are old friends; has no idea of time, and does not know where she is. When asked where she is, she will sometimes say, "At the New York Hospital," and a half-hour later she will say, "At St. Luke's Hospital." She thinks that she has only been in the institution an hour. (The same remark applies to her condition on the 20th and 25th of November.) She is frequently noisy at night, but has no recollection of it in the morning. When asked where she was on the previous evening, will say, "At Aunt Jennie's," or, "At some corner liquor store."

Treatment. Strychnine, ferri pyrophos., etc.

30th. No mental or physical change. Faradic current to paralyzed muscles, and massage ordered.

December 22. Out of bed for the first time yesterday; is able to walk a little; mentally unchanged.

30th. Appears to realize that she is in an asylum, but is still troubled by hallucinations of hearing, not of sight; memory still defective, has no idea how long she has been here.

January 22, 1892. Walks with difficulty, but is able to be out of bed all day. Mentally, is very irritable and abusive, still confused, and has a poor memory; also retains illusions of mistaken identity.

R. B., female, aged thirty-six years; married. Denies syphilis; habits intemperate. Present illness commenced three weeks previous to my seeing her; onset abrupt; patient can give no account of how she was taken sick, or where she was taken to at the time. Has no idea of where she is, except in a general way that it is a hospital, nor how long she has been there. Has hallucinations of sight and hearing, especially in reference to a dog, which she constantly begs to have removed from her bed. These hallucinations with delusions are increased at night, the patient becoming very

noisy. Events up to the time of her illness are clearly remembered, but events of a few minutes ago are quickly forgotten. The physical signs of the disease were typical: marked paralysis of the lower extremities, loss of reflexes, foot-drop, exquisite agony when pressure is made along the nerve and muscles in any attempt to move the patient. Superficial bedsores, yielding to care and treatment, on both heels and over sacrum. A like condition affected increasingly the upper extremities, these showing marked wasting, especially of the muscles of the hands. The patient continued in about the same mental state up to her death, about eight weeks after the onset, due to respiratory and cardiac paralysis.

On autopsy, the brain and cord and nerves showed, macroscopically, nothing abnormal. Microscopically, the preparations which were made by Dr. Warren Coleman, of the Loomis Laboratory, showed the following results:

The musculo-spiral nerve and small nerves of the hands showed marked interstitial degeneration, that is, excessive increase of connective tissue, with many nerve fibres destroyed, the axis-cylinder having disappeared in parts, in others remaining well preserved. The cranial nerves have not been examined. The cord apparently shows evidence of connective-tissue increase, but as it was somewhat softened I would not place much confidence in the examination so far. The brain would seem to show evidence of cell change in the cortex, especially the pyramidal layer, the pericellular spaces being very much enlarged. The vessels are enlarged, showing congestion. The case was of short duration, so that, pathologically, it is rather negative in its results, though indicating organic change.

I would refer to a case with autopsy, recorded by Korsakow in the *Archiv. für Psychiatrie*, vol. xxiii., 1891. The clinical course was almost identical with the last case. The hallucinations, especially referring to dogs; the loss of memory of time and place, with delirium, increased at night; presenting also the typical peripheral lesions, with death following from paralysis of the vagus and phrenic. The cause in this case could not be referred to alcohol, but to septic poisoning following extra-uterine pregnancy. The autopsy showed, in reference to the brain and cord and nerves, the following conditions:

Macroscopically, the brain substance and cord showed nothing abnormal. Microscopically, the peripheral nerves showed degenerative changes, those lying most distal from the cord exhibiting the Wallerian form; those more proximal were affected in various segments with intervening healthy portions. The brain revealed nothing abnormal. The cord showed in the lumbar region the canal distended and divided into three portions, one extending into the posterior horns. In the cervical region, in Goll's tract, and in the lateral tract, an increase of connective tissue was found. The

author refers to a case of alcoholic neuritis with arterial and connective-tissue changes.

In conclusion, therefore, from the study of the cases, I believe that in multiple neuritis, especially when due to alcohol, we have a disease that affects the brain and cord as well as the peripheral nerves, and that the cerebral symptoms are not infrequently the most distinctive, their special characteristics being loss of memory of time and place, with impaired association of ideas, accompanied at times with hallucinations and delusions. The course of the disease may be acute or chronic, lasting several weeks or months, or even years. An ultimate recovery, partial or complete, occurs even in the most chronic cases. The pathological findings point toward probable organic changes in the brain.

XLIV. The Personal Equation in Dermatology.

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Everyone who has had much practical experience in the management of patients with diseases of the skin, will readily understand the meaning of the title of this paper. While in a considerable share of cases, the recognition and treatment of this class of diseases is often a simple matter to those well acquainted with this branch, in a certain number of instances it will continually be found that there are appearances in the disease, and disappointments in therapeutics, which are often somewhat difficult to account for. Not only will the skin lesions themselves present unusual or peculiar features, but the therapeutic effects from well-recognized means or measures which have hitherto been found effective, will sometimes be extremely disappointing, and not infrequently an eruption in regard to which a favorable prognosis has been given, will prove most refractory even under the best-directed effort of the physician.

These deviations from the expected condition of affairs will often prove a most serious annoyance to those not especially acquainted with or occupied in dermatology, while even to those who

are best prepared in this line they will present, at times, very great difficulty.

In many of these instances of temporary failure or disappointment, the real reason will often be found in an element of practice, too often overlooked, namely, in the *personal equation* presented by the patient. Not only will the individual, from personal idiosyncrasy, exhibit an unusual or peculiar resistance to drugs, but oftentimes remedies and measures which should otherwise produce a beneficent effect will be found not only inefficacious, but decidedly harmful. Personal idiosyncrasies will also often manifest themselves in the production of certain phases of eruptions, as is well known, in the various forms which have been frequently described as produced by certain drugs.

We may, therefore, consider our subject under the four general heads of *etiology*, *diagnosis*, *prognosis*, and *treatment*.

Etiology.—It is quite unnecessary to enter here at large into the subject of medicinal eruptions, which have been fully presented in several monographs, as well as in very many journal articles. Among the best known instances of the production of skin lesions by means of the internal administration of articles used as drugs, may be mentioned those produced by the various preparations of iodine and bromine. Many individuals are so constituted that often the smallest portion of these preparations will at once produce marked and troublesome eruptions. Copaiba, quinine, belladonna, chloral, antipyrine, and many other drugs are also occasionally seen to be followed by more or less of skin phenomena; indeed the list has increased so of late years that it is possible that even a large share of the substances used in medicine may at some time be followed by changes in the skin; even rhubarb, perhaps the most freely used of all remedies, has been known to produce an eruption each time that it was administered.

Time and space forbid any description of the effects produced, which may be found fully detailed elsewhere. Thus we see that, from an etiological standpoint, the "personal equation" may be of the greatest importance in dermatology.

Diagnosis.—The forms and appearances of very many eruptions will sometimes be found to be very considerably altered, owing to personal idiosyncrasy in the patient. In addition to the pustular or suppurative character, which commonly finds expression in the skin affections occurring upon those of a strumous

habit or constitution, and the congested and inflamed aspect generally presented by eruptions in those exhibiting a gouty or lithæmic state, and finally the irritating nature of many developed in those manifesting a neurotic temperament, we may often discover other phases or peculiarities arising from or dependent upon personal idiosyncrasy.

In this connection the possibility of artificially produced or feigned eruptions, must never be forgotten; for, sometimes skin lesions thus excited, for the purpose of deception, will present the very greatest difficulties in diagnosis, although, again, their recognition may in some cases be quite simple. The self-control of the patient, or the want of it, may often be the means of producing the very greatest differences in individual instances of the same eruption, according as it has been torn in scratching, or according as the lesions have been left to run their own natural course.

In this connection also must be mentioned the matter of treatment, either self-instituted or professionally directed, which having been carried out with the various degrees of diligence, may have so altered the proper and typical condition of the eruption as to render its recognition difficult. In this and other ways, the "personal equation" may sometimes enter into dermatology to such a degree as to make more or less of obscurity, in regard to the diagnosis of some affections.

Prognosis.—So largely does the personal element enter as a factor into the real nature and character of certain skin affections, and so commonly are skin lesions caused by the condition or state of the patient's health, and so different are different individuals in regard to their recuperative power, that the "personal equation" has a very great bearing in regard to the prognosis of skin affections, in many instances. Cases will often be presented quite similar to one another, in whom the ultimate course of the disease will turn out to be as widely different as possible. In one individual an eruption is readily checked at the onset, while in another, apparently presenting the same features, no such happy result will be obtained by the use of the same remedies, or others apparently quite suited to the case. A prognosis which will turn out quite correct in one instance, will be found far from correct in another, when there is apparently no reason to be found for such different results, either in the disease itself or in the surroundings of the patients.

Perhaps one of the most striking illustrations of the influence

of the "personal equation" in disease, will often be found in the case of syphilis. While one individual exhibiting, perhaps, a very marked and severe primary lesion, will escape with but a moderate amount of subsequent manifestation of the poison, and the sum total of his sufferings from the disease will be very slight, another individual, with a relatively insignificant primary lesion, may have secondary and tertiary phenomena of the most distressing character. And, again, while in one instance the disease may expend itself in a very short time, and the patient remain apparently free from its influence for an indefinite period thereafter, in another instance the individual will suffer from a large number of sequelæ, perhaps of the most severe character, extending over a very long period of time. Indeed, in some cases it seems questionable if the patient can ever be freed from the later results of the poison.

Psoriasis also differs very greatly in regard to prognosis in different individuals; some cases yield with remarkable ease, while others persist in spite of the most assiduous and faithful treatment, even during a lifetime.

The "personal equation" also stands out very prominently in connection with acne; not only will some cases exhibit vastly more severe lesions than others from no apparent cause, but also the eruption will prove infinitely more intractable in some individuals than in others, in spite of the very best and most intelligently directed treatment, bearing on every feature of the case. Not until the patient is understood with regard to individual peculiarities, can a safe prognosis be given.

The same is somewhat true in regard to eczema, although to a lesser degree. While under very thorough and judicious treatment, including hygienic and dietary elements, the eruption can be successfully combated and the disease cured in a very large proportion of cases, still in a certain number of instances, in spite of the most careful attention, the disease will persist indefinitely; the difference is due largely to personal idiosyncrasies in the patient, which have not been or cannot be met.

Thus in regard to prognosis in skin affections, the "personal equation" plays an important part, not only in the instances mentioned, but also throughout the whole range of diseases included in this branch.

Treatment.—It is, however, in the treatment of skin affections that the "personal equation" will often exhibit itself in its

most striking, and at times, annoying characters, and will account for a share, at least, of the rebelliousness popularly attributed to this class of diseases.

While in hospitals and public clinics it is not very uncommon, for economy of time and labor, to have formulæ prepared which are used in different diseases, so that the late Mr. Startin once remarked that their application in the diseases of the skin was a matter of routine, depending upon correct diagnosis, it will be constantly found that disappointment will follow any attempt at routine practice, and that prescriptions recommended for this or that affection will by no means prove as valuable and effective as might be supposed or expected.

The uncertainty in regard to the results following this class of remedies is perhaps indicated as clearly as it could be by the general use of the oxide of zinc ointment externally, and arsenic internally, by so many physicians in various diseases of the skin. Practical experience has shown that these remedies seldom do much harm, even if they do comparatively little good, in the majority of skin affections; but for active and efficient service all know that quite other remedies must be used, and that, too, with intelligence and with due regard to the individual patient under treatment, as well as the morbid process which is to be checked.

The "personal equation" in therapeutics relates both to external and internal measures, and these will be considered separately.

Individual skins will be found to differ immensely in regard to their bearing toward various local stimuli, and the same is true in regard to the effect upon them of many of the substances applied as medicaments. One of the most common annoyances which will meet the practitioner in this direction, is the susceptibility of some skins to the action of glycerin; instances are sometimes seen where the slightest amount of this substance, in lotions or otherwise, will be attended with the most disagreeable symptoms of heat and burning.

Great difference will also sometimes be observed in regard to the behavior of different skins under the application of fatty substances, and occasionally the failure to benefit an eruption by various ointments will lie in the rebelliousness of the skin to the fatty excipient, rather than in the error in the medicament compounded with it. I have seen a number of patients who could not bear

lanolin, however much diluted, and occasionally have met with those in whom vaseline seemed to act as a poison.

The same is true of many of the substances incorporated in applications to the skin. Tar is very differently borne by different skins, and a preparation of it which will prove most comfortable and beneficial to one, will only irritate another. The same will be constantly observed in regard to sulphur, as all will know who have had much experience in the treatment of scabies with this remedy; this may also often be observed in the treatment of acne with lotions containing sulphur.

Resorcin is commonly well borne if applied in a strength suitable to the case, but instances occur where, if used in any form or strength, it will prove irritating.

Veratria will sometimes act with most unexpected severity, and occasionally individuals will be found who cannot bear it even to the slightest degree.

Quinine will also occasionally prove most irritating to the skin, and I recall a recent case where, on two occasions, a mild quinine hair tonic gave origin to severe dermatitis about the neck and ears. This lady said that the same trouble had occurred once before when quinine was applied in the form of a lotion.

All who have at any time used chrysarobin locally will remember how differently it acts upon different skins; while some are able to employ a preparation of considerable strength, in others the smallest amount of the drug applied externally will give rise to a very uncomfortable dermatitis.

Pyrogallol will also sometimes excite an unexpected amount of eruption on the skin, and the same may be observed with salicylic acid. The eruptions following the application of iodoform in certain cases are also familiar to many.

It would be out of place to attempt here to mention even a share of the instances in which individual idiosyncrasies have arisen in regard to the external application of many drugs, as this matter has already been fully illustrated by many reported cases, and its consideration would lead us far beyond the scope of the present article. These points have merely been mentioned, however, as illustrative of the existing evidence regarding the "personal equation" in connection with the external treatment of diseases of the skin.

Not less striking are the phenomena sometimes observed, in sus-

ceptible persons, in connection with the internal administration of drugs, which may either have been used for a skin disease or for some other malady. Perhaps the oldest and best known of these manifestations of individual idiosyncrasy is in connection with the results sometimes following the internal administration of the various forms of iodine. So annoying are these, sometimes, especially in connection with iodide of potassium, that it would seem almost impossible to use the drug, however much it might be demanded by the diseased state present.

Bromine eruptions are also well known, and anyone who has had much to do with the administration of either iodine or bromine, will recognize clearly the fact that individuals vary very greatly with regard to their susceptibility to the unpleasant action arising from them.

The eruption following cubebs is also pretty generally recognized, as also those following the internal administration of belladonna, quinine, chloral, antipyrine, etc., in certain susceptible individuals. Sulphide of calcium will also, in rare cases, instead of controlling the suppurative process, actually produce a pustular eruption of its own.

These illustrations will serve sufficiently to show that the "personal equation" is an important element in regard to the administration of drugs, and that in this connection it must often have considerable importance in connection with lesions found upon the skin.

In concluding this brief sketch of some of the elements to be regarded in connection with the study and treatment of individual cases of disease of the skin, I feel that the matter has been but imperfectly treated, and that this presentation is by no means as perfect as could be made. For many years past the subject has presented itself with a greater or less force to my mind, and if notes had been taken of the various points and illustrations which have arisen in my practice, this presentation would be very much more complete. It is given, however, as it is, at the present time, as a suggestive study of a matter which has received little, if any, consideration, either in the text-books or periodical literature, and I trust that the added experience of others and further consideration of the subject may lead to a better knowledge and more frequent recognition of the "personal equation" in connection with the treatment of diseases of the skin, and so, in a measure, may lead to a more satisfactory management of the same in many instances.

XLV. Mineral Waters in Therapeutics.

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In the treatment of disease by mineral waters many factors must be considered which contribute to the effect obtained. The climatological condition of the place (for I am assuming that the patient is treated at the springs), the environment of the patient, the chemical constitution of the mineral waters used, their method of application, and the dietetic and hygienic care of the patient, all, severally and collectively, have their influence which must be considered, and so the effect of the treatment can never be attributed to the waters alone. Owing to the complexity of the subject and the varying influence of either one of these factors for good in a given case, our knowledge of the application of mineral waters to diseased conditions is purely empirical.

The practical value of any treatment by mineral waters depends upon its correct application, and in selecting one or another watering-place to which to send our patients, we must be guided either by our personal experience with the treatment given at that place, or by the knowledge gained of that particular place from the evidence of recorded clinical data based upon the accurate observation of patients treated there.

In this country there are but few places where such records are kept, or where the treatment, in fact, is carried out in other than a very perfunctory manner, and it is not strange that the medical profession of this country, as a class, have a very meagre knowledge of the great value of this branch of therapeutics, and are inclined to look upon it as a method that savors strongly of quackery and charlatanism.

My object in presenting this paper for your consideration, is not to give you a scientific treatise on the use of mineral waters as a therapeutic agent, nor to advance any theory of the action of mineral waters in their varied application to diseased conditions, but merely to describe to you one class of mineral waters as represented by the sulphur waters of Richfield Springs, as well as the methods employed there in the treatment of disease, and to give you the results of my observations as to the effect of that treatment in

various conditions. In doing this it is my desire to awaken in your minds an interest in this branch of medicine that will lead you to an investigation of its merits as a therapeutic measure; to enlist your interest and aid in the study of the subject, and in the observations that I am making every season at Richfield Springs, that may, perhaps, lead to a similar study of other mineral waters and watering-places, so that in time we may have sufficiently reliable clinical data upon which to base a correct application of the various mineral springs with which this country abounds.

In and about the immediate vicinity of Richfield are a dozen or more natural mineral springs, which vary but slightly in their chemical composition, and may be classed with the Calcic Sulphur Waters. The water which is exclusively used in the treatment at Richfield is furnished by three wells, coming from the earth at a depth of 120 feet, and furnishing 26,000 gallons per day, nearly twice as much as can be possibly used. The water from these wells flows into the large well in the pump-room, from which it is taken to supply the uses of the bathing establishment. The analysis of the water, as made by Professor Chandler, of New York, is as follows:

Contains in one United States gallon of 231 *cubic inches*—

	Grains.
Hydrosulphate of sodium	1.7189
Hydrosulphate of calcium	0.0908
Sulphate of potassa	1.6656
Sulphate of lime	112.3379
Sulphate of strontia	0.0105
Sulphate of barium	trace
Sulphate of magnesia	5.1498
Bicarbonate of iron	trace
Phosphate of lime	0.0067
Chloride of sodium	0.5249
Chloride of lithium	0.0165
Alumina	trace
Silica	0.6515
Total	154.2835
Sulphuretted hydrogen	14.206 cubic inches.

It will be seen that the amount of sulphuretted hydrogen is unusually large. It is doubtless to this principle that the efficacy of the water is due.

In the treatment of patients, these waters are used both internally and externally, though I do not depend much upon the internal

use of the water, and in some cases dispense with it altogether. The reason for this lies in the fact that in certain cases the water seems to be difficult of digestion, and will produce irritation of the digestive organs with consequent depression of the system. It is not usually prescribed when there is evident weakness of the digestive power, but when used at all in these cases it is ordered hot, when it seems to be better borne. This is doubtless due to the fact that in heating the water the lime salts are precipitated and a small amount of sulphuretted hydrogen is liberated.

The effect of the water upon the bowels is variable, sometimes producing free catharsis for a day or two, but more frequently diminishing their action, and necessitating the use of some mild aperient. It is the custom when this condition exists to use the one-tenth of a grain or one-fourth of a grain calomel tablets, and the slight stimulation to the liver which they produce is followed by much benefit. The amount of water ingested varies from one-half to one ordinary tumblerful taken one hour before breakfast and dinner.

It is drunk slowly, and after drinking it the patient is directed to walk about for half an hour to aid in its absorption. The water is never ordered to be taken after dinner, as it is seldom well borne at that time. When there is marked digestive disturbance I prescribe the drinking of hot plain water taken before each meal, and I believe thoroughly in its value. In fact, it seems to me that the ingestion of large quantities of water aids materially in the treatment of most conditions which come under my care at Richfield, and I encourage the drinking of Vichy, Lithia, or any of the pure bottled waters, in addition to the sulphur water or plain hot water prescribed. The effect of the sulphur water taken in this way is to promote and increase the urinary secretion, and it also increases to a great extent the activity of the skin.

The most frequent method of applying the waters externally is in the immersion- or the tub-bath. There are in the bathing establishment at Richfield seventy rooms devoted to this kind of bath. The bath-tubs are commodious, and when filled completely cover the patient with the exception of the head, which rests upon a broad band of welting stretched across the end of the tub. The effect of the bath depends upon the temperature of the water and the length of time in which the patient remains in the bath. The temperature will vary from 98° to 108° Fahr., baths below or above these tem-

peratures being very rarely used; the time varies from six to twelve minutes. The immediate effect of the sulphur baths irrespective of temperature in most cases is a depressing one, amounting sometimes to extreme fatigue with trembling of the limbs, a condition which lasts from half an hour to two or three hours, when a reaction sets in, restoring the patient to his usual vigor and often extending to a point of exhilaration. If the depression immediately following the bath lasts longer than three hours the reaction stage will be very slow, if it comes at all, an effect to be avoided, as extreme debility is apt to follow a few baths of this kind.

In prescribing the bath it is our object to determine if possible the point of tolerance of our patients, that is, to so regulate the temperature and time of the bath that we will obtain its constitutional effect, as shown by the slight depression immediately following it, but which will be followed by prompt reaction afterward. This point of tolerance must be determined by experience with each individual patient, as the reactive power in different persons varies greatly, irrespective of their physical condition; sometimes even a patient weakened and debilitated by a severe attack of rheumatism or gout will react more quickly than an apparently strong one. It is wise, then, in order to be on the safe side, to begin the treatment with such a bath as will produce the minimum effect.

At Richfield the bath is usually prescribed in the beginning at 100° Fahr., for eight minutes. It is taken in this way for three baths, when some idea of the effect upon the patient can be obtained. Then the temperature and time is gradually increased or diminished, as the needs of the patient seem to indicate. The reaction may be greatly facilitated by the care of the patient after the bath, and is a matter of great importance in every bathing procedure. Upon coming from the bath the patient's skin is in a very active condition, and is usually covered with profuse perspiration. He is carefully dried, dressed in warm, woollen clothing, which should be provided for the purpose, and is instructed to retire for at least one hour, or until the skin is cool and all sense of fatigue has disappeared. At Richfield reclining-rooms have been provided in the establishment for this purpose, but as the distance to the hotels and boarding-houses is so short, it is quite as well, and certainly more agreeable to the patient, to go directly to his room after the bath and there regularly go to bed. I have never seen any ill

results follow this procedure. Sometimes on the day following the bath, the patient will experience some depression and weakness, notwithstanding the immediate depression of the bath was followed by prompt reaction. In these cases it is the custom of some physicians to omit the bath on the second day to allow the patient to recuperate. I do not sanction this procedure, as I believe that by it we lose much of the good effect or impression of the bath. The fault lies in the fact that the bath is too hot, or lasted too long, which may be corrected by regulating the bath, while the continuance of the bath every day should be insisted upon.

There is, however, a condition induced by the baths which almost invariably manifests itself after about a week's treatment, although I have seen it as early as the fourth and as late as the fourteenth day. This is the condition described by writers on this subject as the thermal or bath fever. Its symptoms are quite well marked and need never be confounded with the depression above referred to. There is marked frontal headache, usually of a dull, heavy character, though at times it may be severe or neuralgic in its character, accompanied by malaise and lassitude, with loss of appetite, and usually constipation. The tongue will be coated, and there will be marked digestive disturbance with flatulence. I have never noticed any elevation in the body temperature, and if it occurs it must be very slight. Suspension of all treatment for two or three days is usually sufficient to relieve this condition, though in certain cases small doses of calomel may be used with excellent results to assist in correcting it. As soon as the disturbance is overcome the treatment may be resumed where it was left off, and continued to the end without further interruption. I have never seen but one case in which it recurred during a course of twenty-one baths, and that was in the case of a lady who was under treatment last summer, in whom this disturbance occurred regularly after every fourth bath, during the entire course. The ultimate effect of the treatment in her case was most pleasing, however, ridding her entirely of the rheumatism for which she was treated, and which has not occurred since.

In conjunction with the tub-bath, massage is used quite extensively and with admirable results. The massage-rooms, of which there are eight, are fitted with the porcelain tubs the same as the tub-bath rooms proper, and have, in addition, a bed adapted especially to massage treatment. After the bath, the patient is dried

and placed upon the bed where the treatment is given. Immediately after the bath is the most favorable time for treatment, as the tissues are relaxed, and greater movement can be given to stiffened joints. Great care must be exercised in subacute cases, as the manipulation, if not carefully given, is very apt to light up the inflammation in a joint, when all treatment must be stopped until it has completely subsided. The douche is used alone in certain cases, and in conjunction with the tub-bath in most rheumatic and gouty cases. Its advantage in the latter over the tub-bath lies in the facility with which special portions of the body may be shampooed and rubbed, while the hot water is poured over them and the parts are relaxed. In the case of patients where one or more joints are affected, the treatment by douche and massage is devoted exclusively to the affected joints for five or ten minutes. The patient is then put in the tub-bath, where he remains from five to ten minutes longer.

The method employed in giving the douche is the same as that followed at Aix-les-Bains. The patient sits in a wooden chair with his feet in hot water, and one or two douchers propel jets of hot water over the affected part, simultaneously shampooing and kneading the parts, thus stimulating the capillary and general circulation. The spinal douche is applied in quite another manner, and is indicated in an entirely different class of cases. In the treatment of insomnia by the spinal douche the effect is obtained by the difference in the degrees of heat employed together with the force of the impact of the stream. The patient stands in a pan of hot water, and steadies himself by grasping two hand-rails for the purpose, at a distance of about ten feet from the doucher. A stream of water from the half-inch nozzle, at a temperature of about 100° in the beginning, is thrown upon the nape of the neck, and the stream slowly moved down the spine to the extreme end of it, when it is carried up again to the starting-point. The temperature of the water is gradually increased until it is as hot as the patient can bear, usually from 110° to 120°. This movement is repeated until the skin over the spine is very red and active. The hot stream is then taken off and two or three quick strokes of cold water are thrown up and down the spine. Then the cool spray is given over the entire body from a large "rose" nozzle for a few seconds only. The patient is dried quickly with hot sheets, wrapped in warm woollen blankets, and rests for fifteen to twenty minutes,

when he is dressed and goes home to bed. The immediate effect of this douche is slightly stimulating. This feeling passes off in the course of an hour, and a restful, comfortable feeling takes its place, which is most conducive to sleep. For insomnia this douche is always best given just before retiring at night.

The Turkish and the sulphur vapor baths are used as adjuncts to the general treatment at Richfield, and are seldom exclusively relied upon in any class of cases. The method of administering the Turkish bath is the same as that used in most Turkish-bath establishments. In the sulphur vapor bath the patient sits in a large box with the head out through a hole in a movable top, and vapor from the sulphur water is turned into the box, until the heat is as great as can be borne with comfort. The patient remains in this vapor for from seven to fifteen minutes, when he is taken out, rubbed and shampooed, and cooled off with the various showers and sprays. By way of variety the sulphur vapor bath is sometimes ordered, but no special importance is attached to its use except in certain forms of chronic skin diseases where we wish to rid the skin of accumulated detritus.

Rheumatism and gout are the conditions to which the treatment at Richfield is particularly adapted, and the majority of patients who go there for treatment are sufferers from either one or the other. The effect of the treatment upon this class of cases is quite uniform, and a case that is not in some measure benefited is an exceedingly rare exception. It is frequently noticed, however, that the patient may not get relief from pain in the slightest degree while undergoing the treatment, and, in fact, the pain is sometimes even increased. But relief after the course of baths is finished is almost invariably experienced, and an immunity from attacks during the succeeding winter is generally assured. My case records have not been kept long enough as yet to make them of any statistical value, but thus far I have sufficient memoranda of facts to warrant me in saying that, to my knowledge, there is no treatment for rheumatism or gout that will give such good results as those by the waters of Richfield, as they are applied there. In sciatica and other neuralgias, the waters in conjunction with the douche have been very successful. Of eleven cases of which I have records, two were sent home cured, five so much relieved that they had only occasional pain when over-fatigued, two were slightly benefited, while the other two got very little relief, if any, though

the general condition of health was improved. The manner of giving the douche in these cases was different from that described as being used in the rheumatic condition. With these there was no shampooing, and the stream of hot water was thrown from the small nozzle with a great deal of force, over the course of the sciatic nerve and over the sacrum. In the beginning the force seemed to produce some pain, but the patients soon became accustomed to it, and found it agreeable and soothing. The hot water was used until the skin was thoroughly reddened, a few strokes of cold water were then given to facilitate reaction, and the patients were immediately immersed in the tub-bath. Insomnia has been relieved by the spinal douche taken before retiring in most cases which have been treated by it. In two cases the effect was very marked; and in one other, while the sleep was not unbroken, the patient said that when she awakened during the night she was not restless as before using the douche, but felt soothed and quieted by it.

Two cases of jaundice, resulting probably from catarrh of the bile-duct, were greatly benefited by hot douches over the liver (with force), followed by the tub-bath and massage. The skin began to clear after four of the baths, and progress was rapid and satisfactory. Of the skin diseases treated by the waters and baths, the best effect seems to have been in those in which disturbances of digestion and assimilation were the underlying cause; the different forms of chronic eczema, psoriasis, and the various disturbances of the sebaceous glands, as in seborrhœa and eczema seborrhœicum.

Two cases of urticaria were very much improved by a course of the baths. In syphilis I cannot say if the waters of themselves have any curative effect, as I have never treated a case of syphilis without potass. iodid. or mercury in some form. I can say, however, that the drugs employed seem to act much more promptly, and are much better borne with the baths than without them. I have made no observations that would tend to confirm the idea that sulphur waters often reveal latent syphilis.

The treatment of chronic catarrhal conditions of the pharynx by the inhalation of the atomized sulphur water has been in some cases very gratifying. The number of cases treated thus far has not been sufficient to enable us to speak with much certainty as to permanent results, but the few good results obtained encourage us to believe that this method offers very much as a remedial measure

I have purposely omitted speaking of the general care of the patient while undergoing the treatment until now, for the reason that I wish particularly to emphasize its great importance. Without the strictest attention to the detail of diet and general regimen our medical treatment is often without avail. This is particularly true of the class of patients who come to Richfield, in whom digestive disturbances of some sort exist in nearly nine-tenths of all. This may seem an exaggeration, but I believe I state facts.

In general ways the diet, of course, must be adapted to the individual needs of the patient, and no rules can be laid down that will apply to all. There is, however, a diet for the rheumatic and gouty cases which it is my invariable custom to prescribe, and I very seldom have occasion to change it, except, possibly, in the less important details. The patients are put upon a nitrogenous and albuminous diet. Fresh fruits, starches, and sweets are abjured. I permit patients to eat meat of any kind (except fresh pork and veal) twice or three times a day, if they wish it, and find no ill effect from it.

In pleasant weather moderate outdoor exercise is enjoined, and on disagreeable days the gymnasium is brought into requisition. When patients are unable to take active exercise from debility or lameness, massage is used to keep up the activity of the tissues and passive movements give strength to stiffened joints.

In presenting this paper to you, it has been my object simply to describe the sulphur waters of Richfield, the methods employed in applying them there, and relate to you my experience with their use as a remedial measure. The theory of their action and the possible scope of their usefulness I leave entirely for your own consideration.

XLVI. The Danger of Milk from Tuberculous Cows.

By EDWARD F. BRUSH, M.D.,
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The domesticated bovine animal appears to be, above all other animals, subject to tuberculosis. This animal is capable of bearing the tuberculous processes in their natural state—that is, without breaking down and producing sepsis, which is the cause of death

in the disease known variously as phthisis, consumption, and so forth. In other words, a dairy cow will have fulfilled her functions with profit to her owner, and only when she reaches the butcher is it discovered that tuberculous growths are present in various parts of her body. No other animal that I know can be tuberculous for so long a period without exhibiting evidences of the disease, and hence the diagnosis of this disease in the domestic cow is often a very difficult matter.

The reason why the domestic cow bears the tuberculous processes without their breaking down is by reason of her natural bodily temperature, her normal average temperature being 102½°. This I have ascertained from personal observation on hundreds of apparently healthy animals, extending over several years. This is about the temperature that arises in the human subject during the stage of active tuberculization, and this high temperature in the human subject is a prominent etiological factor in the constitutional disturbance, eventuating in the breaking down of the tubercle that leads to the sepsis producing death. Now, this normal temperature of the cow admits of the growth of the tubercle without constitutional disturbance, and consequently the animal's resistance is retained and tuberculous processes attain enormous proportions without affecting the general health or usefulness of the animal. Therefore, in order that a cow may develop the tuberculosis that kills, some other morbid agency (traumatism, puerperal septicæmia, etc.) must supervene to set up the breaking-down process in the tubercle. When acute miliary tuberculosis takes place in the cow, old tuberculous processes are always found, and the temperature is then increased only a degree and a half. Acute miliary tuberculosis in the cow is a comparatively rare disease, and hence many dairymen, cattle-dealers, and breeders imagine that tuberculosis is rare, or more rare than is reported to exist in dairy cattle, for this reason alone, or because so few cases die in comparison with the number of animals affected. Therefore these men do not see the latent evidences of disease, their standard of perfect health in dairy animals being the ability of the animal to perform its functions with profit to its owner; and having no comparative standard of health, they regard the animal as sick only when it refuses to yield milk or fatten for the butcher.

Now, what is the danger of milk from tuberculous cows when used as human food? Of course, an animal affected with acute

miliary tuberculosis that kills—and this is the only form of tuberculosis that kills an animal—in this form the milk-secretions are suppressed very soon after the onset of the general infection; and, as the disease is comparatively rare, milk from these animals is not so common as the literature on the subject would lead one to suppose, while the chronic latent form of the disease is always more or less present in the ordinary dairies that supply milk for food; and it is very safe to assume that everyone that drinks milk as it is furnished to cities takes milk from animals affected with tuberculosis—the chronic form always, the acute form occasionally. So the question, as it seems to me, should be, When is the human subject fit to take the milk from tuberculous cows with impunity? for there can be little doubt but that in a robust state of health the human being can ingest with impunity the food from tuberculous animals, and probably in many conditions of impaired health such food can be taken without apparent danger. Of course, tuberculosis cannot be studied in the same light as other infectious diseases, because the introduction of the poison into the system to-day may require a year or ten years before it is developed into a disease. It is therefore almost utterly impossible for anyone to say in a given case where the infection came from. In the study of this disease, taking isolated or individual cases, where apparent cause and effect stood in close relationship, it is simply a coincidence, and is highly misleading. I have watched the medical literature on the subject very carefully for a number of years, and there are a few cases cited where the evidence pointed strongly to the domestic cow as the direct source of the infection. In other cases, in which I have myself known children brought up on the milk of tuberculous cows, no evil has as yet resulted, and I have never been able to associate any case of tuberculosis in the human subject, infant or adult, directly with a tuberculous cow. I know a girl to-day, thirteen years old, whose food for two years after weaning was mainly the milk of a tuberculous cow. The cow, of course, was then affected with chronic tuberculosis, and ultimately succumbed to general infection. The milk was given to this child directly from the cow, and warm, and the child has always been remarkably healthy. About two years ago a friend of mine wanted me to see his cow and say what was the matter with her. I found her suffering from acute pulmonary tuberculosis of the miliary type. She was killed, and we found old tuberculous processes in the

mesentery glands. These were not broken down, but a large mass in the mediastinum was broken down, and seemed to be the source from whence the general infection spread. The laryngeal glands were also chronically enlarged. This was a family cow, and furnished three children of the household, aged respectively from two to seven years, with their daily supply of milk. These children, all of remarkably robust health, are perfectly well to-day. But this kind of negative testimony proves no more than the positive testimony that has been thus far accumulated. The disease must be studied, not by isolated cases, but on a broad field. There are some ludicrous instances in the history of the disease illustrating the fallacy of drawing deductions from circumscribed observations: "In 1677 twelve students who had taken their repast in the Consistorium of Leipzig, died. At the inquest it was proved that the hotel-keeper had given them, in addition to other food of a bad description, the flesh of emaciated and infected cows, whose viscera were covered with a great number of vesicles, of tubercular nodules, and of purulent tumors. Externally this flesh did not offer any abnormal appearance." In the light of our knowledge in the present day it is safe to assume that, whatever else these students may have died from, it was not simply the tuberculous meat that killed them. Nevertheless this unfortunate accident stirred up an exaggerated public feeling on the continent of Europe, and most countries passed stringent laws. Three years after the Leipzig accident the German States enacted very severe measures to prevent the sale of meat from tuberculous cattle. Butchers were afraid to have anything to do with animals showing the least trace of the disease; the carcasses, and even the instruments used in slaughtering such cattle, were turned over to the public executioner. These measures involved a heavy loss to the cattlemen; and it was found that the executioners did not destroy the diseased carcasses, but consumed them in their own families or sold them to others, and that no injury resulted from the use of this flesh. Then the pendulum began to swing in the opposite direction, and the medical men began to teach that tuberculosis was not a contagious disease, and that the flesh could be eaten with impunity. In fact, the meat of tuberculous cows was publicly advertised as of good quality. Zuierlioz, a doctor of medicine and philosophy at Bruckenau, took twenty-five pounds of flesh from a tuberculous ox and ate it, in order to show that such meat was not injurious. This doctor also prepared

a broth made from the tuberculous nodules of the ox, and drank it in the market-place before a large number of people. Then about this time the various governments began to rescind the various stringent regulations, and the prejudice against the use of such food ceased to exist. Now, in our day, with the increased knowledge we possess as to the etiology of the disease, stimulating increased discussion and enlarging the literature on the subject, the public are in danger of adopting the same unreasoning prejudice. I say "unreasoning prejudice," not because I underestimate the danger of the presence of tuberculous animals as food-producers, but because the methods heretofore adopted are inadequate and one-sided. I firmly believe that all the tuberculosis that afflicts the human race is derived from the domesticated bovine, because the only people on the face of the earth who enjoy immunity from tuberculosis are those who do not harbor domesticated tuberculous animals. If this broad statement is true, what does it signify? Can we control the disease by condemning animals only when they come to the butcher, and allowing the milk to be used until he makes the diagnosis for us? If consumption is a contagious disease, and the human race stands in danger of the contagium coming from their most useful food animals, would it not be wise to regulate the breeding of such animals? There are bovines that are reported to enjoy a total immunity from tuberculosis, and so it is possible for us to produce a breed that will not menace the human race. But until the vast number of earnest workers who are moulding medical and scientific opinion unite their forces in this direction, and until we get an animal not tuberculous, we must use our best efforts to avert the dangers that now threaten us. I do not believe that anybody can tell at what stage of tuberculosis in the cow the milk is safe or becoming dangerous. We have statistical facts enough pointing to the morbid conditions in the human subject creating a receptivity to the contagium. We know that nearly 50 per cent. of diabetic subjects are carried off by pulmonary phthisis. Surely we should guard a patient with this disease from the possibility of contagion; also in all other conditions of emaciation and lowered resistance in the adult. With children I have no doubt that the danger is far greater, as their food is solely or chiefly milk. I sincerely believe that a child in perfect health can take the milk of a tuberculous cow with impunity; but a child that is born with a feeble constitution, or of tuberculous parent or parents, or suffering from

cachexia, or any of the wasting diseases, should not be allowed to have milk from a tuberculous cow, no matter what stage of the disease may exist in the cow. As to sterilizing or boiling the milk for these children, the process may or may not eliminate the disease germs—and we have pretty good evidence that boiling does not—but we are certain that either process lowers the nutritive value of a food already below par (if from a tuberculous cow) by reason of the diseased condition of the animal itself. So in the same cases where the milk of tuberculous animals is to be prohibited, the absolute necessity of the highest type of food also necessitates the exclusion of boiled or sterilized milk of any kind. As all cows are not tuberculous, it is perfectly feasible to select animals to supply infant food. As, however, the chronic forms of tuberculosis in the dairy cow are not easily recognized, the medical man knows little or nothing about the cow; and, as the American veterinary schools have paid less attention than the subject deserves, there are few people who are able to detect the earlier symptoms. The necessity for more definite knowledge of the cow herself by all practitioners is evident, so that when it becomes necessary to prohibit the use of food that is apt to kill, there should be more people able to detect the morbific conditions at work in the food-producing animal. We can safely assert that in our time tuberculosis will not be entirely eliminated from the dairy cow. We are approaching the period when it will be; meanwhile, therefore, let us guard the susceptible, and aid in the advance toward the annihilation of one source of danger to the human race.

XLVII. The Successful Treatment of Chronic Diseases: A Plea for their More Methodical Management.

By SIMON BARUCH, M.D.,
NEW YORK.

The modern management of diseased conditions is a happy evolution from the more crude methods of our predecessors. In this most important department of medical activity we are, however, still compelled to acknowledge many deficiencies and shortcomings. What is the modern status of therapeutics? To-day we stand in breathless expectancy, awaiting the dawn of precision

in therapeutics. This hope is vain! Recent experience has demonstrated the fallacy of specific therapeusis after it had been promulgated by a master mind and adopted as an experiment by the best clinicians in every part of the globe.

The result of the analytical methods of modern therapeutics is the realization of the fact that the physician must act as the alert assistant to the conservative powers residing within the body, and whose tendency is usually in the direction of restoration.

It is almost regarded as an axiomatic truth in therapeutics that in acute diseases, at least, the physician cannot throttle disease, but must watch and wait for a point of vantage, when he may come to the rescue of the system, which is battling against it. To weaken the influence of the disease, to strengthen the resistance of the organism, are the great principles of the modern treatment of acute diseases. Whether we do so by rest, diet, bathing, antipyretics, anodynes, hypnotics, or by specific agents like quinine and mercury, this is the recognized goal of the modern management of acute diseases. It is the aim of this paper to emphasize the necessity of recognizing the same therapeutic principles in the management of chronic disease that have happily attained almost universal adoption in acute disease.

Does the modern physician, who is so trustful to Nature in acute disease that he has almost become a therapeutic nihilist, feel inspired with hope or confidence in the latter? Far from it, alas! Palliation is the chief goal of his therapeutics; he thinks not of restoration. No wonder that he undertakes the case handicapped by his apprehensions and treats it in a half-hearted manner. There are, nevertheless, many chronic diseases acknowledged to be incurable, which would yield to systematic, persistent, judicious treatment, applied as we apply it in acute diseases. I say this from my own experience of thirty years in private and hospital practice, in civil and military, in rural, village, and metropolitan life. I say it, sustained by the published experience of clinical teachers like Ziemssen, Dujardin-Beaumetz, and Semmola, representing three countries.

If all the manifestations of a chronic disease have ceased for a reasonable length of time, such disease is, in my opinion, cured as completely as an acute disease, with the condition that, since chronic diseases are usually traceable to slow and insidious etio-

logical factors, these must be sought out and removed in acute diseases.

What are the elements of success in the management of chronic disease? In order to answer this question we must narrow it down to definite diseases. I desire to refer here briefly to—1st. Diathetic diseases, as phthisis, rheumatism, and gout. 2d. Functional diseases, *i. e.*, those in which no positive destructive change in tissue elements has taken place. In both classes of disease the road to effective management lies, as it does in acute disease, to sustaining the resisting power of the organism, and to weakening the force of the disease.

I. Diathetic Diseases.—*Phthisis* offers a good illustration. This is a disease in which there is a local manifestation due to a general infection. Realizing this fact, its most modern management has become exceedingly simple, and more successful in proportion to its simplicity. We have the testimony of specialists like Dettweiler and others to the clinical fact that by removal of the patient from his unfavorable environment to an institution in which pure, dry air, combined with appropriate food and other elements of treatment, may be obtained, we weaken the disease and improve the patient's chances of recovery. Climatic agencies have been the chief agencies of phthisis-therapy for many years. There is, however, much groping in the dark, much hap-hazard prescription of change of air, which has brought discredit in the lay and professional mind upon this all-important element of treatment. Simplicity is in this matter as important as it is in all therapeutic questions. It is a principle recognized by those best qualified to judge that the climate which affords the patient the best opportunity for the most continuous breathing of pure air, air free from dust or other vitiating matter, is the most useful climate. While other elements, such as altitude, etc., are important, absolute purity of the air and the possibility of utilizing it at all times, night and day, without interruption, is the chief. This is the kernel of rational therapy of phthisis. *The constant exposure of the phthisical patient to pure air is the cardinal truth of* climate-therapy, as cleanliness is now recognized by the surgeon in wound treatment. It is not this or that particular climate; it is not this or that particular altitude which is most conducive to recovery, but methodical treatment under conditions which afford the patient the

best opportunity for outdoor life, in air that is free from dust and other vicious elements; these are the true curative factors.

This idea has been most successfully, because most intelligently, carried into practical execution at Falkenstein, where Dr. Dettweiler pins his faith chiefly to the curative influence of pure air, to which he exposes his patients, without regard to the rigorous climate in winter even, at all seasons. The discipline of this institution is rigid and almost military in exacting obedience. No drugs whatever are used at Falkenstein, and still the results are most satisfactory, 37 per cent., including all grades, recovering completely. Prof. Bouchard has recently introduced this treatment into France.

Dr. Nicaise has reported to the French Academy of Medicine his experience with this treatment, during the winter of 1888–89, on the Mediterranean. The aim is to enable the patient to inspire perfectly fresh (not cold) air, which is constantly made to stream in through open windows, chimneys and doors, or window-cracks. This "open-window" method of treating phthisis has recently been practised with great success by Dr. M. Moizard, of the Hôpital Tenon, at Paris. The most striking result observed by him was the increase of appetite, followed by a gain in weight. With the exception of cases of acute tuberculosis and broncho-pneumonia, this method affords much relief in the ordinary progressive form of phthisis, arresting denutrition, fever, night-sweats, and diarrhœa, especially if it is resorted to at an early period. At Brehmer's Institute, at Goerbersdorf, the same principle has long been adopted. The patient is almost constantly exposed to fresh air, without drafts, and well protected against too sudden changes.

This principle, involving the paramount importance of a continuous supply of fresh air, seems to be so well established that it should be made the guiding star in all cases, whether they be under institutional or private treatment.

The second indication is to endow the system with the power of resisting the inroads of the established disease and treating complications and sequelæ. That indication may be met by the fulfilment of the first indication, residence in an appropriate climate, by a proper and carefully regulated diet and hygiene, by certain medicinal agents, and last, but not least, by a judicious hydrotherapy. It is not my aim to discuss here the medicinal agents that have from time to time been recommended in phthisis, from cod-liver oil to the more recent hypodermic medications. I

desire chiefly to dwell upon the non-medicinal agencies—agencies whose value has been thoroughly tested and approved. Among these a brief reference to the errors of omission but too often practised, and which sad experience has taught me to learn, is the necessity of *careful regulation of exercise.* Consumptives who are not bedridden are but too frequently allowed, if not advised, to indulge in exercise short of fatigue. This is an error which has cost many lives and much misery. If the morning temperature reaches 99°, moderate, gentle walking on level ground, with frequent respites or carriage exercise, may be resorted to at that time. Abstention from exercise, then, when the temperature is habitually above 100°, should be the rule. The lungs should be treated as is every other inflamed organ. So long as active inflammation exists they should be kept at rest, or slowly and gently expanded. Much of the ill effect of absolute quiescence will be counteracted, as I shall show, by hydrotherapy.

In this measure we possess an agent whose power for good is incalculable, and which has given me more valuable assistance than all other means combined. The judicious application of cold or cool water to the periphery produces a stimulus to the sensory nerves, which is transmitted to the central nervous system, and thus refreshes every function dependent upon the latter. The respiration is gently but slowly deepened whenever the cold water impinges upon the skin. The heart is made to contract with more vigor when the peripheral circulation is improved by the shock, and consequent contraction and subsequent dilatation of the cutaneous capillaries. The appetite is improved, tissue-change increases, and if there is a rise of temperature it is subdued mildly but surely. Of course, these effects depend upon the intensity of the cold and the manner of its application.

That hydrotherapy has demonstrated its value as a tonic agent is a well-known fact. Its value in phthisis has been recognized by Brehmer, who even claimed to be the first to apply it in this disease. Winternitz has shown that it must be an agent of decided tonic power, inasmuch as out of 2400 guests at his institute in Kaltenleutgeben, which I have personally visited, 56 per cent. showed an increase of weight. Therefore, as nutrition is the chief aim in phthisis-therapy, we possess in this method a powerful weapon which, rightly used, has demonstrated its value.

But, aside from this important consideration, the predisposition

to repeated colds and consequent probable aggravation of the local processes and general symptoms may be diminished by the neuro-vascular discipline to which the skin is daily subjected by applications of cold water in some appropriate form. This hardening process has long been recommended for those predisposed to phthisis. Ziemssen speaks of it in his lectures on treatment of tuberculosis as "a remedy of extraordinary value for persons who are predisposed to have acquired phthisis."

The technique of these procedures varies. Brief applications of low temperature, as by the douche or rain-bath, the wet pack, or rapid ablutions, are followed by rapid reactions, and, if well borne, are exceedingly useful as tonics; while, on the contrary, in cases suffering from elevated temperatures and great debility, more gentle procedures and higher temperatures are required. I have myself seen damage done to these cases by too cold applications, which are better indicated in a febrile or mildly febrile condition. This is contrary to views usually entertained on the therapeutic action of cold baths. My observation at the Montefiore Home for Incurables, in which cases of the most forlorn type, so far as previous hygienic surroundings are concerned, are received, has led me to adopt the following course, because the skins of many of these poor people have long been strangers to cold water, or, indeed, water of any kind.

After a thorough cleansing warm bath or soap ablution, a day is allowed to elapse. The patient is now wrapped snugly, quite naked, in a woollen blanket, so that his entire body is excluded from air; other blankets are piled over him; the windows are opened, and he is given a small glass of iced water every ten minutes. Having lain in this position an hour, one part of the body is exposed and bathed, as follows: A basin of water at 75° is ready, into which the attendant dips his right hand, covered by a mitten or glove of Turkish towelling. With the wet glove the face is well bathed. Now one arm is exposed and rapidly washed and rubbed, then dried and replaced under the blanket. Other parts are thus successively treated. At the termination of this ablution the patient is rapidly rubbed all over with a coarse towel. This treatment is repeated daily, the temperature of the water being reduced two degrees on each occasion.

The next step is the dripping sheet. The patient standing in a tub of water at 100° F. has a sheet dipped in water at 70° thrown

over his head and body from behind, and is wrapped completely and snugly in it. The attendant now rapidly passes his outstretched hand over successive parts of the body, with some pressure upon the sheet. He rubs the *sheet*, not *with* the sheet. One or more pitchers of water, five to ten degrees colder, are thrown upon the parts that have been subjected to friction. The sheet is removed, and the patient rapidly dried. This method requires great care and skilful application. Its success or failure depends upon ascertaining by previous treatment the reactive capacity of the patient. The most useful hydriatric procedure in phthisis, however, is the rain-bath. Unfortunately, this finely divided douche can only be administered in institutions. The patient stands within a frame constructed of six semicircles of inch tubing, the upper one on a line with the clavicles. Each tube has three lines of fine perforations, the upper line directed upward, the middle straight forward, the lower downward. The water should have a fall of not less than forty feet. The temperature adapted to the average case of phthisis is 75° F. Here the pressure with which the water strikes the body forms a kind of massage which assists in producing reaction even in feeble individuals. But it should not be applied without previous training of the skin as above described. The rain-bath is an antipyretic of great value, if its temperature is not below 60° nor above 70°; it is a stimulant and tonic if between 55° and 65° F. The skin should become pink while under it, and the patient must not be chilled by it; at least any coldness he may experience should disappear after he is dried. *This, indeed, is a test of the efficiency of all hydriatric procedures.* Decided chilliness continuing after thorough drying and friction is an evidence of improper selection of the temperature, duration, or method of the bath. These should be modified as indicated by their effects.

The following cases, taken from the records of the Montefiore Home by Dr. M. Rosenthal, the senior resident physician, may serve as an illustration of the clinical results of this treatment:

Case I.—J. J., tailor, aged thirty-three years; German; admitted February 2, 1890. Family history negative. Illness of one and one-half years' duration. Began with a pulmonary hemorrhage, followed by cough; spat blood two days, and felt better after it; continued to cough until December, 1889, when he had a most severe hemorrhage, became very weak, and was confined to bed; continues weak; cannot work; coughs a great deal; expectorates a little mucus, often mixed with blood; pains in back; appetite good, bowels regular.

Physical signs. Dulness over right upper lobe as far as first rib, posteriorly to border of scapula; slight dulness over left apex; uncertain and accentuated breathing, with prolonged expiration over right apex, feeble respiration over left. Temperature normal; pulse, 84; respiration, 28. February 18th, weight 135 pounds. Treatment: One minim creasote pill, t. i. d., with cod-liver oil, ℥ss. Rain-bath at 65° for thirty seconds daily. March 20th, quite a little cough in the morning. April 25th, weight 161½ pounds. May 5th, appetite not so good, otherwise very comfortable; coughs sometimes in the morning; no expectoration; weight, 160½ pounds. Discharged at his own request; has been at work since that time.

Case II.—I. D., aged thirty-six years; ill two years and a half; had hemorrhage two years ago; since then night-sweats, cough, expectoration and pain in left side; has been treated twice at Mount Sinai Hospital for phthisis.

Physical signs. On admission dulness over left apex, impaired breathing; pleuritic friction râles on right side along axillary space; weight, 162½ pounds. Treatment: General sustaining measures, with daily rain-bath at 65° for thirty seconds; damp compresses to chest. Result: Improvement of all symptoms, and gain of fourteen pounds and a half during ten weeks. December 16, 1890, he was subjected to tuberculin treatment until April 29th, other treatment being suspended.

At the present time there is no cough, the least amount of expectoration, and but few pleuritic friction sounds over left apex; weight, 178½ pounds. Dr. Hodenpyl, who kindly examined all sputa, reported: "First examination, about ten bacilli to the field; second examination, very few bacilli; third, fourth, and fifth examinations, *no bacilli*."

This patient may be regarded as recovered, judging from the physical signs, subjective symptoms, his general condition, and the absence of bacilli. He steadily lost in flesh and strength and appetite until he resumed the rain-baths, when he again began to improve until he gained seven pounds over his weight just before the injections, and twenty-one pounds over his weight on entering. He was discharged on July 14th, weighing 183 pounds, and is looking for work.

Case III.—H. S., aged thirty-one years; admitted May 2, 1890. Family history negative; always well until May, 1889, when he had first pulmonary hemorrhage; was confined to bed eight weeks with cough, night-sweats, and afternoon fevers. In September, 1889, and January, 1890, he had hemorrhages, and went to Mount Sinai Hospital, whence he was discharged improved in seven weeks. He had cough, expectoration, and pain in the chest; no appetite when admitted.

Physical examination. Dulness over right third anteriorly and posteriorly; subcrepitant and friction râles; broncho-vesicular respiration, with prolonged expiration. On left side prolonged expiration, with some friction sounds over left apex: weight, 129¼ pounds. August, 1890, sputum found to contain bacilli. In September, 1890, he had a hemorrhage.

During this time he received rain-baths, syrup of the hypophosphites and creasote; at times cod-liver oil. *Under this treatment he steadily improved,* so that when he was subjected to tuberculin injections on December 16, 1890,

he weighed 146 pounds—a gain of sixteen and one-quarter pounds in six months and a half—and *no bacilli were found* by Dr. Hodenpyl in his sputum. There were still, however, dulness over right apex, broncho-vesicular respiration, and subcrepitant râles. His temperature was 99°. April 15th, tuberculin injections discontinued. There being no tubercle bacilli in the sputum and no cough or expectoration, and the physical signs being only a slight, jerky respiration, he was discharged as cured April 29th, weighing 149 pounds. He has, therefore, increased twenty pounds since his admission, and three and one-half pounds since injections were begun, during the continuance of which he lost very considerably. He is now at work in Bronxville, N. Y.

Case IV.—A. V., a nurse in the Montefiore Home, weighed, in summer of 1890, 138 pounds. She was constantly engaged in the wards, in which her mother was also a nurse. She began to lose flesh while at work; cough and expectoration were pronounced, and she had two slight hemorrhages.

Physical examination revealed impaired resonance over left apex, jerky, exaggerated respiration: fine, moist, and pleuritic râles. Bacilli abundant in the sputum; weight, 126 pounds on January 5th, when she was subjected to tuberculin injections. She received twenty-one injections, progressively increased; they were always followed by decided febrile reaction. The last injection of 45 milligrammes was administered on the 1st of April, and was followed by very slight reaction. During the entire treatment she had daily rain-baths. April 10th, cough, expectoration, night-sweats, and physical signs have ceased; her weight increased to 132 pounds, and, no bacillii being found in the sputum, she was discharged at her own request as cured. She is now working as a private nurse, feeling perfectly well.

In these cases the effect of the tuberculin was either deleterious or negative, while that of the rain-baths was excellent. The following case is cited to illustrate the tonic effect of hydrotherapy in a desperate and advanced case of phthisis:

Case V.—B. S., aged eighteen years, architect; admitted November 19, 1890; mother died of chronic phthisis; has been ill since he had an attack of pneumonia two years ago, with night-sweats, troublesome cough, and loss of flesh.

Physical signs. Tympanitic dulness over the upper third of left lung anteriorly, cracked-pot sound, cavernous râles, tubercular breathing, signs of catarrh in right apex; complains of palpitation greatly; weight, 115 pounds; bacilli numerous. Treatment: Rain-baths, 70° to 65°, for thirty seconds; cod-liver oil and creasote. December 16th: Up to this time his weight had increased eight pounds; physical signs the same. He was now subjected to tuberculin treatment, under which he increased (as an exception to the rule), on April 10th, to 138 pounds. Cough does not trouble him now, and he expectorates very little; a few bacilli at every examination; physical signs not so pronounced; râles few, and there is evidence of contraction of cavity. The palpitations, which troubled him greatly, have disappeared.

Dr. Hodenpyl's report of examination is interesting: December 16th, one hundred tubercle bacilli to each cover-glass; January 7th, one hundred

tubercle bacilli to each cover-glass; February 2d, two bacilli to field; February 16th, five bacilli to field; March 1st, two bacilli to field. May 7th, weight 139 pounds; has been receiving rain-baths since the injections were stopped. He looks well, and may be regarded as markedly improved. He was discharged on July 14th, weighing 140 pounds, and looking the picture of health.

Bear with me while I cite a case from private practice, which illustrates the air and water treatment, which has given me such satisfactory results that I would commend it to your attention, despite the fact that it involves much trouble and demands much judgment.

Case VI.—Mr. H. M., aged twenty-eight years, whose brother died of phthisis, was sent to Minnesota seven years ago by Dr. A. L. Loomis with the diagnosis of incipient phthisis. He settled in St. Paul, married, and his health improved, so that he regarded himself as cured. He had been rapidly running down of late with cough, night-sweats, and fever. He arrived in New York January 9, 1891. Infiltration in right apex as far as the second rib. The general signs indicated a more advanced lesion. Temperature, from 101° to 104°; cough incessant, accompanied by uniformly blood-stained expectoration, containing bacilli abundantly; appetite entirely gone, sleep unsatisfactory, and accompanied by exhausting sweats. Altogether he presented a picture of rapidly advancing process.

The weather was extremely severe, snow being frequent. Being exhausted from the journey, he was allowed to rest a few days. The principle of the pure air treatment was adopted in the following simple fashion. During the night the windows of the parlor floor were allowed to remain partly open. In the morning he was placed in the parlor upon a steamer-chair, wrapped in furs from head to foot, the face alone exposed. All the windows, except one in his immediate vicinity, were opened. He remained in this position from one to four hours, daily increasing the time. The windows were closed at 12 o'clock, when he was taken to his bedroom, which had been in the meantime thoroughly aired and warmed just before his return. He now received hydriatric treatment, after which he had luncheon, and was again placed in his steamer-chair on the parlor floor. The bedroom was ventilated until he returned. One window was left open from the top over night. He was gradually educated to bear water treatment during the first five days. He then received the dripping sheet at 70°, with affusions at 65°; reducing both two degrees every third day until the former was 64° and the latter 58°. He had abundance of milk, which he formerly loathed; and as his appetite improved, eggs, strong farinaceous broths and mushes. On March 14th he had so far improved that he had registered a normal temperature for two weeks, even in the evening; he was entirely free from cough and expectoration, except early in the morning; there were no night-sweats, he slept soundly. The physical signs had improved, so that it required a very careful auscultation to discover them. Bacilli continued to appear, but in dimin-

ished numbers. He had attained his normal weight, gaining twelve pounds in flesh. I did not resist the importunities of the patient to allow him to return to St. Paul, inasmuch as he insisted that he was now in far better condition (feeling quite well) than when Dr. Loomis sent him there seven years ago.

The second chapter in this case is equally interesting and relevant to my subject. A few days after his return home he rode in an open cable-car in inclement weather, contracting a cold which brought him to bed. Imperfect water treatment which he obtained at home probably contributed to this issue. He was desperately ill, his physicians declaring it useless to treat him any longer. Feeling that hydrotherapy had rescued him from desperate straits before, he determined to make the journey to New York. He arrived the latter part of April in a most forlorn condition. Examination revealed a catarrhal pneumonia, involving the entire lower half of the left lung, with evidences of softening anteriorly just under the nipple. His temperature ranged from 102° to 105°, he had night-sweats, severe cough and expectoration, no appetite. Nevertheless I subjected him to the same course as in the first instance, without any result however. Wet packs, too, failed to reduce his fever. He now entered the Montefiore Home for the purpose of more systematic treatment. Here the rain-baths always reduced his temperature; otherwise he did not improve. He then was treated at home by my private nurse, but steadily failed. As a last resort, regarding the treatment at home as imperfect in some way, I had him brought to Long Branch, in order to have him under my personal supervision. The night sweats were now so exhausting that I gave him atropine without effect. He was again subjected here to a systematic water and air treatment. He was ordered to lie in a hammock under the trees all day; he had wet packs and the dripping-sheet under my personal direction. Improvement was marked, showing itself first in a morning normal temperature and better appetite. In three weeks he was so much better that he committed the imprudence of walking a mile to the Iron pier to receive his wife. This act came near being fatal to him. The local process was again lighted up. He was put to bed, linen compresses wrung out of water at 65°, and later out of 50°, were wrapped around his chest and covered by a flannel flandage, renewed every hour, renewal being preceded by an ablution of the chest with water at 70°. He had a general ablution morning and evening. Under this treatment of absolute rest, and without any medicine except a creasote mixture, he again improved, with the exception of a brief relapse caused by another imprudence. When he left Long Branch in September, his appetite and general symptoms were greatly improved; there had been no sweats in four weeks, no fever in two weeks; he had gained flesh, coughed very little; there were evidences that the cavity was contracting. He is now in excellent condition. According to a recent letter he has gained seven and a half pounds in weight, has very little cough, good appetite, and a temperature never exceeding 99°, usually normal. He is now a commercial traveller in Montana.

This case is given somewhat at length, because it illustrates the necessity for rest and care, as well as the method and value of the air and water treatment in mild and desperate cases.

Gout and Rheumatism.

Chronic gout is a diathetic disease, in which there is misdirected tissue change. This essay being chiefly clinical, it is not my province to enter into a description of the opinions held regarding the nature of gout. Fortunately, most observers are agreed upon the essential point that gout is the result of a partial retardation of tissue change, with stasis in the metamorphosis, and oxidation of nitrogenous substances in the grade of uric acid.

In *rheumatism*, also, we have a perverted nutritive process, whose products are turned into faulty channels. For therapeutic discussion, therefore, we may combine these maladies, though they differ essentially in many respects both as to their etiology and nature.

We have in both diseases the manifestation of a vicious mode of life or of exposure to other deleterious influences, combined or not with inherited tendencies, which but too often play an important rôle in etiology. We must address our treatment in both to improving the digestion and assimilation of food, increasing elimination of effete products, and, by supporting the strength, enhance the patient's powers of resistance. The utter futility of medicinal treatment for these purposes is evidenced by the multiplicity of remedies which have accumulated in our books upon the subject.

To accomplish any valuable result in such maladies, to rearrange as it were the entire nutritive system, to divert it from its vicious tendencies, to remove products of retrograde tissue metamorphosis and to prevent their reproduction, experience has shown may best be done by physiological agencies, as diet, exercise, and certain hydriatric measures.

It is my custom to give these patients a diet containing the smallest possible quantity of nitrogenous material. Red meats are forbidden; also, the white of eggs, fermented liquors—indeed, all foods or drinks which tend to increase the production of urea and uric acid. As Semmola has shown, there is no method of treatment which has given such remarkable result in these disturbances of tissue change as judicious diet and exercise, combined with hydrotherapy. Massage in the more painful stages, passive exercise in the subacute conditions, are indicated. Most observers are agreed upon this point. The judicious prescription and equally

judicious observance thereof, of gentle muscular exercise, form an important element in the treatment of gout and rheumatism.

A powerful auxiliary to judicious diet and exercise may be found in the application of certain hydriatric procedures. It will be found useful to distinguish in this connection between the several types of gout and rheumatism which come under observation: 1st. The anæmic type, rendered so by long continuance of the disease and subsequent abstention of exercise, by loss of sleep, etc. 2d. The plethoric form usually, though not altogether, found among the better situated gouty. 3d. The intermediate form between these.

In the first type, a tonic procedure being indicated, we have in gentle and judicious application of cold water our most valuable remedy. The skin should be educated as was described in the treatment of phthisis, first by the dry pack and subsequent cold ablutions, then by the dripping sheet and rain-bath.

In the third (intermediate) type the same course may be pursued. In these cases we have in the wet pack valuable means not only of promoting tissue change, but of removing debility, improving the appetite, and building up the nerve tone.

The second type (the plethoric), in which there is so much stiffness in joints and muscles without general failure of health, is more difficult to manage. The resolvent method is the most useful. In these cases I have found the hot air bath, followed by the douche, most applicable. And here let me say a word of warning against the indiscriminate use of the Turkish bath. Being applied by ignorant attendants, the patient is subjected to treatment which may do him much damage. What is a luxury and comfort for the healthy is certainly not always best for the sick. The box hot-air bath, followed by the cold douche, is, after educating the patient's skin, a most valuable measure. It has been demonstrated by Frey and Heiligenthal that it increases tissue metamorphosis, and that there is consequently an increased elimination of urea and uric acid. The theoretical considerations involved cannot be discussed here. Suffice it to state that they produce a diminution of the quantity of urine, increase its concentration, as evidenced by greater specific gravity; retention of uric acid at first, but *a threefold increase of elimination later*), which, as well as the urea, continue to be eliminated more freely for several days.

Systematic treatment will show in all chronic diseases what has been proved in that most intractable of all—*phthisis*. The follow-

ing clinical history from Duval (p. 553), illustrates the value of methodical treatment even in desperate cases. It is of the third type mentioned above.

Case VII.—Z., a Pole, aged sixty-five years, well developed, of biliosanguine temperament, high color, was sent to me by my friend, Dr. Raciborski. Patient presented nodosities on most of his fingers and metatarsophalangeal articulation. Every week he had grievous attacks, lasting two to four days.

Morning and evening he had a rain-bath of five seconds, followed by a jet douche of a minute, played all over the affected articulation. On the 16th he had a severe attack; he was placed in the hot-air box, with wet compresses on head and feet, and when the skin became warm he received several drinks of cold water every five to ten minutes. He perspired freely in twenty-five minutes, and was now placed into a rain-douche for fifteen seconds, followed by a jet douche as above. He was well rubbed with warm, dry cloths, and was now able to walk, which he had not been able to do in two years so soon after an attack. The douches were renewed every day, the hot-air baths every two days; the paroxysms returned, but with less severity. On the 24th one commenced, which was completely aborted. Treatment was continued, but he had three more approaches to attacks in ten days. From the 15th of January he had the hot-air bath every day. He left on the 12th of February, after having been entirely well for over a month, since which time he has remained well.

The following case illustrates the successful treatment of chronic rheumatism, which was regarded as so incurable as to pass examination for admission to the Montefiore Home. I am indebted to the senior resident, Dr. Max Rosenthal, for this valuable history:

Case VIII.—S. Z., aged twenty-six years: single; Austrian; waiter; admitted November 14, 1889. Family history: Father died at forty-five years, twenty-one years ago, of phthisis; mother is alive and well; five brothers and two sisters, all alive and well. Personal history: Sick six months: at fourteen years had rheumatism, with severe pains in the muscles: no fever; lasted about seven months: cured by baths. Last July attacked by gonorrhœa, discharge slight: treated by copaiba and injections. Two weeks after commencement of urethral trouble noticed swelling at the root of toes of right foot and painful right knee. At time of admission presented swelling of right ankle, especially marked upon its inner aspect; swelling of the eminences of the big and little toes; the latter very painful on pressure. Other foot was about the same; knees very painful; standing more painful than walking; gait stiff and much impaired. Appetite was poor; bowels rather constipated; urine high-colored. Gonorrhœa had stopped four months before admission. Sleep poor, was very anæmic, and badly nourished. Urine 1.022.

Treatment. Anti rheumatic diet. Ferr. oxid. sacch., ʒss t. i. d. Hot

fomentations and pack and half-bath on alternate days. Cold compress to feet daily; changed six-hourly. After admission appetite improved materially; sleep poor; constipation continued. Rochelle salts, one ounce, in hot water at 6.15 A.M., daily. January 2, 1890, entirely cured of rheumatism. Feels in excellent health; constipation relieved; sleep still imperfect. Discharged cured.

CASE IX.—A case of chronic rheumatism from Duval's work may be cited with advantage (p. 693). On the 19th of April, 1875, Dr. Dubois (of Litte) brought me Monsieur X., who had been suffering for ten years from a most grave and rebellious rheumatic affection, which had received all kinds of medication. All the large and small articulations were tumefied; his complexion was bilious, eyes glassy; he looked cachectic; he had a little fever, and suffered from complete insomnia. The treatment was preluded by a general ablution with water at 24° (82° F.), repeated in the afternoon with water at 16° (61° F.), followed by a rain-douche of five seconds. After each operation he received half a glass of cold water. Every day afterward he was placed in the hot-air box (étuve sèche); during which he received large quantities of cold water and had his head moistened. This was followed by a rain douche over the entire body and an energetic jet douche on the joints. On the 10th of May, Mr. X. left entirely cured, and rejoiced at his unhoped-for transformation.

Additional histories would fatigue by their sameness. These cases are very much alike. There is a history of long suffering, stiffness and impeded locomotion, and general hopelessness due to the failure to a multiplicity of remedies and doctors of high and low degree. They have rarely had systematic, prolonged treatment of any kind. None of these cases should be regarded as hopeless until such treatment, including hydrotherapy and its auxiliaries, have been fairly tried. My personal experience and observation justifies this positive assertion. I have here, as in other diseases, intentionally omitted the recital of cases from my private practice, preferring to illustrate by cases recorded in hospitals and institutions, because one is more or less liable to be biased in the reporting of his own successful cases.

Diabetes.

Another disease illustrating the value of systematic treatment is diabetes—a malady that has probably received more so-called systematic management than any other. It has been recognized that by the diminution or entire removal of starchy and saccharine food, the quantity of sugar appearing in the urine may be limited, that the patient's health is improved by the diminution of the ex-

haustion incident to the perverted functions, which robs him of his storehouse of force—*glycogen*. This was, indeed, a great step in advance; but I regard it as of paramount importance to impress upon the patient the need not only of systematic diet, but of systematic exercise. Unless the physician be convinced of this, he will permit the disinclination of all diabetics to exercise to overcome his injunction. The latter cannot be made too strong. *A certain definite amount of exercise must be prescribed and taken.* I advise the use of the pedometer for the purpose of *measuring and recording the amount of walking exercise*, which is by far the best taken by the patient. Whenever we shall dose our exercise as we do our medicines, and see to it that our prescriptions are followed as punctiliously as we are wont to do in medicine, we shall achieve greater precision in our results. The recognition of muscular exercise as an important element in the treatment of this malady is the logical outcome of physiology, which teaches that the liver and muscles are the most active agents in absorbing sugar from the blood and converting it into glycogen, which in its turn is utilized for the maintenance of the body.

In diabetes the glycogenic function of the liver is either in abeyance or greatly impaired, while the muscles also fail in a great measure to perform their function of disposing of sugar. We resort to the restriction of sugar supply by diminishing or withdrawing those articles of diet which physiology has taught are sugar-producing. We possess no remedy which stimulates the glycogenic function of the liver, but we are in a more favorable position regarding the muscles. By increasing their functional activity we can stimulate the sugar-converting function of the inner fibrillar substance of the muscles, and thus we may dispose of a large portion of the excess of sugar circulating in the blood. Clinical experience is fortunately entirely in accord with this deduction from the teachings of physiology. This fact has again and again been exemplified. It is nothing new; but its true import is unfortunately but too often lost sight of in the eager search for anti-diabetic dietetic, or medicinal specifics. The subject of exercise is often dismissed by directing the patient to exercise in the open air without fatiguing himself. The insufficiency of this injunction is within the experience of every practical physician. It is a well-known fact that diabetics are, as a rule, loath to muscular exertion: lassitude is a common symptom, and something more than the mere

suggestion is required to enforce the necessity of exercise upon these patients. Prof. Finkler said that he "has the records of thirteen cases of diabetes, in which he succeeded in reducing the sugar in the urine from 400 grains to 150 grains and less per day by active and passive exercise, allowing small quantities of hydrocarbons. In some cases the sugar disappeared entirely."

If time permitted, I might cite a goodly number of cases from my private practice in which a combination of systematic exercise, bathing, and diet has caused complete disappearance of sugar from the urine and restoration of strength. Two of the most recent cases occurred last year. Two ladies desired prescriptions for pruritus vaginæ of obstinate type. Examination of the urine revealed 4 per cent. in one, and 3 per cent. in the other. They were both subjected to the above indicated treatment, with a mild domestic hydrotherapy, which they carried out faithfully, with the result of being rapidly restored. Recent examination demonstrate that they continue *free from sugar*, although eighteen months have elapsed, and one of them has eaten wheat bread, occasionally, and fruits, daily, of late.

In this connection it may be of great value to refer to the Von Duehring treatment of diabetes. This physician formerly practised in Hamburg, where he obtained great repute for his cures of diabetes, although he permitted his patient to eat some farinaceous food. A daily wet pack, and a walk from half an hour to three hours after each one of his five meals, constituted the treatment.

The experience of Von Duehring and Finkler coincides with my own, in that patients may be allowed a moderate quantity of starchy food, provided they dispose of the sugar formed by muscular exercise. I have found it advantageous to compensate my diabetics for a certain amount of exercise by an allowance of small quantities of hitherto forbidden food. *Such systematic attention to* the needs and capabilities of the patient's system must inure to the patient's benefit, and enable us to attain more cures than is possible under the present purely dietetic management.

Gastric Ulcer.

I would gladly enter into the discussion of other diseases, usually regarded as incurable or very difficult to cure. But I will content myself with simply referring to one which has long resisted varied medication and diet, with only occasional recovery, but which has

yielded beautiful therapeutic results since a simple but systematic method of management has been devised. I refer to *gastric ulcer*, that most painful of all gastric troubles, which had defied the best-directed efforts for a long time. Since Kussmaul and Leube have pointed out the true nature of ulcus ventriculi, and have devised the systematic rest and feeding treatment which is now so generally adopted in place of the former nitrate of silver and hap-hazard dietetic treatment, these cases afford the physician great satisfaction.

Three cases which were under my treatment recently recall this subject vividly to my mind. In all the cases the pain was distressing; it was supposed to be due to nervous dyspepsia in one, gastric catarrh in the others, as there was no vomiting. The usual remedies had been applied without effect. Hot water and beef pulp, koumiss and other dietary preparations, aided by pepsin, bismuth, and hydrochloric acid, had been diligently used. In all the cases the pain ceased immediately upon the recognition of its etiology, in the existence of a gastric ulcer, and its correct systematic treatment by absolute rest and the exclusive use of milk with 50 per cent. of lime-water. That pain which had resisted all the usual remedies, including in one case large hypodermics of morphine, should yield at once to this regimen, is the most conclusive evidence of the *rationale* of this simplified therapeusis. The irritating effect of the gastric juice upon the abraded surface is neutralized by the bland food; the gastric secretion is diminished by it. Rest to the stomach is secured as far as possible, and thus the rational treatment, beautiful in its simplicity, triumphs over blind medication. Whoever has observed the complete change from excruciating pain to calm comfort, which this simple measure has so often wrought in these cases, must commend the effort to imitate and emulate such simplicity in other maladies.

These illustrations may serve to demonstrate what systematic management may accomplish in chronic diseases, and to designate as succinctly as may be done in the time at our disposal the lines upon which it may be executed.

My own clinical observation is confirmed by that of eminent teachers in Europe, who have striven to impress upon the profession the great value of the natural methods of treatment, aided by judicious medication. Permit me to offer one quotation. Prof. Semmola, of the Naples University, in his recent work (1890) on

Clinical Therapeutics, whose value is attested by a German translation and by a highly commendatory preface by Prof. Nothnagel, of Vienna, says (p. 230): "In visceral troubles, which defy all treatment, because they are favored by special alterations in the tissue changes, the physician may accomplish in many cases a true and real cure. The methodical, internal and external, use of water, together with climate, exercise, etc., stimulate cutaneous activity, and, with it, all functions of tissue change and organic purification, so that often *real marvels of recovery are obtained in serious and desperate forms of disease*. Unfortunately, these wonderful effects are more rare to-day than they were in the time of Priessnitz, and of which I was a personal witness. It is to be regretted that physicians in general do not give to hydriatric treatment that attention which its great value deserves. Those who were in a position to follow the cures of Priessnitz will readily remember what wonderful and unhoped-for recoveries were obtained in Graefenburg by the water treatment. Let me impress deeply upon you this classical method of evoking and furthering a natural therapy which powerfully contributes to rejuvenate the organism and best secures therapeutic success."

II. Functional Diseases offer a wide scope for the inculcation of the principles which this essay aims to advocate. Rarely do we have an opportunity to treat such maladies methodically, for even where they are far advanced the patient is often allowed to pursue his avocations or pleasures. Under the erroneous idea that diversion of the mind is an important factor in the management of these cases, they are permitted to escape the discipline which is the only true means of proper treatment. In recent years an illustration of the value of systematic treatment of some cases of functional nervous trouble, hitherto regarded as the opprobia of medicine, has been observed in the rest-cure introduced by Dr. Weir Mitchell. Volumes have been written upon this ingeniously constructed method of our talented countryman, who has thus immortalized himself by simply applying the *principles I would now urge upon your adoption* in other diseases—viz., a more *methodical application of our remedial measures* chiefly dietetic, hygienic, and psychical.

Anæmia—a faulty hæmatosis—is frequently of functional origin. When it is a manifestation of organic disease, the latter must receive the chief attention. Observation has taught me that these

cases are rarely subjected to any but desultory treatment. Exercise in the open air, change of scene, a nutritious diet, and iron in some form are the main elements of treatment. The patient is allowed to drift along as best he may. Fortunately, many recover under this treatment. That our average results would be more favorable under a carefully planned and punctiliously executed management, every physician of experience will readily grant. Weir Mitchell has given us some beautiful illustrations upon this subject. Dr. Laache, of Christiana, has also recently demonstrated that absolute rest in bed is in many cases essential. Dr. Scholz, of Bremen, treats obstinate cases successfully in his institution.

The usual slipshod iron treatment of anæmia is by no means the ultimate resort of the physician; in desperate cases we have many other resources. But my chief object is to ask attention to the necessity of *promoting and encouraging tissue change* in all diseases in which there is a faulty hæmatosis. Here again I am able to furnish abundant testimony of the auxiliary value of hydrotherapy. Again and again have I observed cases of anæmia and chlorosis, which had defied prolonged iron treatment under my own care as well as under the advice of colleagues, yield readily when a suitable hydriatric method was added.

The most simple means for this purpose is the cold ablution taken every morning while still warm from bed, not with a wash-rag, however, but by pouring water at 70° abundantly from a sponge or pitcher upon successive parts of the patient, who stands in a tub of hot water to prevent chilling. Gradually we may advance to the dripping sheet and wet pack. Several years ago our talented colleague, Dr. Mary Putnam Jacobi, wrote an able essay on the wet pack and massage in anæmia, in which she furnished so exhaustive a description of the method and physiological action of the treatment that I refer you to the original for valuable data. In no type of disease does this systematic treatment evince more brilliant effects than in anæmia and chlorosis.

Functional diseases of the stomach are a fruitful field for methodical treatment. How rarely these are subjected to systematic discipline we have abundant daily testimony. These maladies have become so common, that we rarely encounter a student or professional man or woman who has not at some time suffered from "dyspepsia." In these affections I regard the application of cold water externally by various procedures and the lavage by warm

water, as may be indicated in each case, as probably of greater therapeutic value than all other treatment combined. A single brief history may serve to illustrate the value of systematic treatment in which hydrotherapy and electricity played a prominent rôle.

Case X.—Miss W., daughter of an Ohio physician, aged twenty-three years, was sent to me by Dr. Francke Bosworth, the well-known rhinologist, on May 15, 1889. Pale, emaciated, despondent, the picture of woe and despair, she was brought into my office by her sister. She had been ill three years; suffering first from fainting fits at the menstrual period; afterward from violent pains in the right hand, traversing the body and concentrating in the epigastrium. For these her father and brother had been compelled to admininister morphine for a month. Her stomach became irritable, and has continued so up to the present time; she vomited and spat up nearly all her food, mostly the solids. Sea-baths did not improve her. She studied hard and grew worse. In the fall of 1888 she lived on milk and farinaceous mush, and her stomach was regularly irrigated, without improvement.

She grew worse, became emaciated; she took peptonized milk for a month, but vomited it; meat produced the same effect. Last fall she lived on grapes, which agreed with her. Now she had tonics, pepsin, and all possible medication which her father and brother could muster, without avail. She was sent to Dr. Bosworth, who is a friend of her brother. After being in the city for three weeks without improvement, the doctor sent her to me. She now vomits every day; she traces her ailments to painting lessons, but I drew from her the history of a potent psychical factor as a cause of the sudden violent insanity of the favored nurse of her childhood. My diagnosis was nervous dyspepsia. The stomach was washed out twice a week to remove mucus and fermenting material. She had general faradization daily. Every morning she received the dripping sheet at 60° F., while standing in warm water. Under this systematic management she improved slowly, vomiting ceased entirely; she went to the seaside improved in July. On her homeward journey she called to tell me she had grown stout and felt perfectly well. Last year I received a letter from her informing me that despite family troubles, the death of her father, which necessitated her adopting teaching as a means of livelihood, her health had been perfect. "You would not know me," she wrote, "as the same girl you treated."

Functional nervous diseases. This class of diseases is the plague of our lives, simply because the patient is rarely sufficiently ill to require constant attendance. I am satisfied that in all these cases we may imitate Weir Mitchell with advantage, without resorting to the extreme methods which he judiciously advises for some of them.

Methodical management is the *sine quâ non* of success. Constant observation is required; punctilious reports and submission to

dietetic, hygienic, and medicinal directions alone will enable us to accomplish the best results. I insist that in cases of neurasthenia, hysteria, chorea, and allied troubles, I have derived great advantage from the systematic and judicious application of medicinal and non-medicinal remedies, especially from hydrotherapy.

In his able work in Ziemssen's *Cyclopædia*, Prof. Erb, of Heidelberg, says: "Cold and cool baths, in various forms, belong to the most important therapeutically active agents in the field. This method has, since it has been more carefully studied and more rationally pursued, made notable advances. *Its results in all possible forms of chronic nerve troubles are extraordinarily favorable. There are few remedies which have an equally powerful influence upon the nervous system.*" This indorsement may be accepted as of far greater value than the clinical histories which I am able to furnish in large numbers.

In conclusion, I beg to emphasize the following points:

1. A systematic methodical management which includes all known therapeutic agencies accomplishes results in chronic diseases which must surprise those who treat these cases in the usual desultory manner.

2. It would inure to the interest of both patient and physician, if chronic diseases were treated with the same regard to detail and precision as acute diseases, and if the medical attendant would prefer to dismiss the case to permitting the patient to follow his inclinations and neglect the advice of his physicians.

3. Hydrotherapy is an important and much neglected auxiliary in the treatment of chronic diseases.[1]

"In many chronic diseases it has proved so successful, after failure of medicinal agents, that *no case should be yielded up as hopeless until hydrotherapy in some form has been tried.* My experience at the Montefiore Home, which receives only incurable cases, demonstrates this fact.

"Domestic treatment by the methods here indicated will suffice in most cases, but if these fail a methodical treatment under an expert hydrotherapeutist may be of advantage to the patient.

"The most important elements are the thorough mastering of the general principles of hydrotherapy, precision in their application, and their perfect adaptation to the constitutional peculiarities of

[1] System of Practical Therapeutics, vol. i. p. 514.

each case—*i. e.*, not treating disease, but the patient. For this reason the best consultants in Germany, in Italy, and France—men like Leyden, Charcot, Senator, Semmola, Ziemssen, Nothnagel, Binswanger, and Erb—send their patients to hydrotherapeutic establishments, which are under the direction of educated physicians who have studied the subject, with their diagnosis and general suggestions, rather than with specific directions for the method to be employed. Finally, so much depends upon the reactive capacity of each patient that only systematic observations can determine the most useful hydriatric procedure in each case."

DISCUSSION.

Dr. J. Leonard Corning, of New York: With regard to the treatment of functional nervous diseases, to which reference was made in the paper, men seem sometimes to forget that there is no one method applicable to all of these cases. This remark should be made just now with especial emphasis in connection with the system of Weir Mitchell, which is an excellent one in its place, but absolutely disastrous in cases which have not been selected with intelligence. As far as my observation has gone, the cases which have been benefited by that mode of treatment have occurred in persons suffering from anæmia and atony, or weakness. The cases which have not been benefited by it are those of neurasthenia or nervous prostration accompanied by great irritability. I know of one such case in which this treatment drove the patient nearly insane; and had it not been discontinued, I do not doubt but that she would have ended in a madhouse. Patients suffer from too great mental strain, or brain prostration, with morbid apprehension, are not benefited by it, but are really made worse. Such patients think more—that is, use their brains more—while lying abed than while walking about. The way to give them rest is to cause them to sleep. All our knowledge about the lithæmic state, about a man's secretions and excretions in their relation to health, and about regulating the diet, are more or less theoretical, and any therapeutics based on such ideas may fail; but if we can get the man to sleep he will feel better. In 1880, I published a little book on brain-rest, in which I expressed my views on this subject more fully than I can do here. In that book I advocated in the class of cases under discussion prolonged sleep—say fifteen or sixteen hours out of the twenty-four. That book received a fair amount of attention at that time, but the memory of the profession seems rather short, and the same ideas have been

revived under different forms since by persons who would appear to have forgotten that they had ever been expressed before.

Replying to a question as to the way in which he induced these people to sleep, Dr. Corning said that where one was already in a state of mental depression bromides and hypnotics often increased the depression and drove sleep away. He had, therefore, first given a reasonable amount of coca, or of absinthe, which put the patient in a pleasant state of mind, and then administered a sedative, which was followed by refreshing sleep.

Dr. George A. Evans, of Brooklyn: I think we will find that the truth in this case lies about midway between the two extremes. Take phthisis, for instance: where the patient has a temperature of over 100° F., rest may be said to be absolutely necessary. Rest means functional inactivity, and functional inactivity means lessened nutrition. Let persons having a temperature under 100° take exercise in the open air, and it will favor expectoration of the waste products of the disease and improve the general condition.

Dr. L. Duncan Bulkley, of New York: I have seen a great deal of chronic diseases in one line and another, and I do not think these patients have received the attention and the methodical treatment under the care of physicians which their complaints would certainly warrant. I wish especially to emphasize the very great value of keeping notes of treatment and progress made in cases of chronic diseases. In cases which go on for weeks and months, showing but little change from visit to visit, it is impossible for the busy physician to keep all the details in his mind. I see a great many cases of chronic gout and rheumatism, of congestive conditions and pains in the pelvic organs of girls and women, which have lasted any length of time, pass away under methodical treatment suitable to the condition or symptom. I can much better study and keep track of the different organs by note-making, and secure thereby better results than if I depended upon my memory. I believe that rest, exercise, and diet properly directed will cause many more complaints to disappear than we have yet been able to cure by drugs. Nevertheless, I can testify to the great value of drugs when used in a proper manner.

XLVIII. The Infliction of the Death Penalty by Means of Electricity: Being a Report of Seven Cases.

with remarks on the methods of application and the gross and microscopical effects of electrical currents of lethal energy on the human subject.[1]

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The widespread interest manifested by the general public in the new method of inflicting the death penalty by means of electricity, and the interest which medical science would naturally be expected to feel in the humane and scientific aspects of the subject, especially with reference to the absence of conscious suffering, and the changes, if any, in the tissues and organs of the human body resulting from the passage through it of electrical currents of lethal energy, together with the fact that this method of executing criminals may now be said to have practically passed beyond the experimental stage, would seem to justify, if not indeed to demand, the presentation of an authentic summary of the practical results thus far obtained by someone whose data and conclusions would be derived from actual observation and experience in the application of the statute. The fact that the writer happens to be the only physician who has participated in all of the official preliminary experimental tests of apparatus, and witnessed all of the executions thus far had under the new law—not, however, from any zealous interest in the subject, nor even inclination to be present, but in obedience to the expressed desire of the chief executive of the State and other official superiors—furnishes the only excuse he would offer for undertaking what otherwise might well be regarded as an undesirable task.

In view of the wide publication of distorted and sensational

[1] Read before the Section in Public Health of the New York Academy of Medicine, March 16, 1892; also read by title before the Medical Society of the State of New York, February, 1892.

accounts of the Kemmler execution, and the amount of adverse criticism and even condemnation based thereon of those who were called to act in an advisory capacity in the administration of the law, the writer, at the request of the Governor, prepared an official report of that event, some portions of which are necessarily here reproduced.

The execution of William Kemmler, alias John Hart, at Auburn Prison, on August 6, 1890, pursuant to the statute in such case made and provided, marked the first case in the world's history of the infliction of the death penalty by electricity. Since then six other condemned murderers have been legally killed by this method at Sing Sing Prison—namely, James J. Slocum, Harris A. Smiler, Joseph Wood, and Schichiok Jugigo, on July 7, 1891; Martin D. Loppy, on December 7, 1891; and Charles McElvaine, on February 8, 1892—making in all seven cases of successful infliction of the death penalty by electricity in the State of New York.

The execution of Kemmler was under the immediate direction and control of the prison warden, the Hon. C. F. Durston, and took place in a room set apart for the purpose, in the basement of the administration building of the Auburn Prison, to which the electric current was conducted by means of an ordinary electric-light wire. The apparatus consisted of a stationary engine, an alternating-current dynamo and exciter, a Cardew volt meter, with extra resistance coil, calibrated for a range of from 30 to 2000 volts; an ammeter for alternating currents from 0.10 to 3 ampères, a Wheatstone bridge, rheostat, bell signals, and necessary switches; a "death-chair," with adjustable head-rest, binding straps, and two adjustable electrodes. The dynamo was an alternating-current dynamo intended to supply 750 incandescent lamps of sixteen-candle power each, and capable of generating, as shown by careful tests made several months prior to the execution, a maximum electro-motive pressure of 2,376 volts the commercial and mean voltage being 1680 and 1512, respectively, the speed of the dynamo being 1900 revolutions, and of the exciter 2700. The chair, a square-framed heavy oaken one, with a high, slightly sloping back and broad arms, was fastened to the floor, the feet of the chair being properly insulated. Attached to the back of the chair, above the head-rest, was a sliding arrangement shaped like a figure four (4), the base or horizontal arm of which projected forward, and from which was suspended the head electrode, so as to rest on the vertex, or top of

the head, against which it was firmly held by means of a spiral spring. The spinal or body electrode was attached to the lower part of the back of the chair and projected forward horizontally on a level with the hollow of the sacrum. The electrodes each consisted of a bell-shaped rubber cup about four inches in diameter, the part corresponding to the handle of the bell being of wood, through the long axis of which the wire passed into the bell, terminating in a metallic disc about three inches in diameter, and faced with a layer of sponge. The lower electrode was also provided with a sliding arrangement and spiral spring to hold it in place, while a broad strap fastened to the back of the chair and passed around the lower part of the prisoner's abdomen rendered the contact secure. The head was firmly secured by means of conjoined broad leather bands, which encircled the forehead and chin, concealing the eyes and upper portion of the face, and were fastened to the back of the almost perpendicular head-rest, while the chest, arms, and legs were secured by broad straps attached to corresponding portions of the chair. The wire attached to the head electrode descended from the ceiling, and that of the lower one passed along the floor to the chair, being protected by a strip of wood.

The dynamo and engine were located in one of the prison shops several hundred feet distant from the execution-room ; the voltmeter, ammeter, switch-board, etc., were located in a room adjoining the execution-room, which contained the death-chair, electrodes, and connecting wires. Communication between the meter-room and dynamo-room was by means of electric signals.

The apparatus used in the subsequent executions at Sing Sing was substantially a duplicate of that above described, except as regards the location of the measuring instruments, switch-board, etc., and the form and points of application of the electrodes to be hereafter referred to.

Of the twenty-five official witnesses present, fourteen were physicians, two of whom—Dr. E. C. Spitzka and the writer—were officially designated as physicians by the warden, in pursuance of the statute.

Before Kemmler was brought into the room the warden asked the physicians how long the contact should be maintained. The writer replied, "Twenty seconds," but subsequently assented to ten seconds, in deference to the opinion of another that a considerably less period of time would suffice—an opinion which doubtless would

have been sustained had the electro-motive pressure been sufficiently great.

Unfortunately, in this instance, the voltmeter, ammeter, switch-board, etc., were not located in the execution-room; hence, none of the official witnesses could know precisely how much the electro-motive pressure and current strength were at the time of making and during the continuance of the first contact. Nor has the voltage or ampèrage in this instance, to the writer's knowledge, ever been officially determined. But reasoning from the known lethal effect of an electro-motive pressure of 1600 volts and upward, as shown by subsequent executions and by deaths which have occurred from accidental contact with live electric wires, as well as by numerous experiments on animals whose weight exceeded that of man, solid ground is afforded for the conclusion that no human being can survive the passage through his body of an alternating current of more than 1500 volts for a period of even twenty seconds, the contact being perfect.

The preliminary arrangements having been completed, Kemmler was brought into the execution-room by the warden and introduced to the witnesses, who were seated in a semicircle facing the death-chair. On entering the room the prisoner appeared strikingly calm and collected. In fact, his manner and appearance indicated a state of subdued elation, as if gratified at being the central figure of the occasion, his somewhat limited intellect evidently rendering him unable to fully appreciate the gravity of his situation. He was given a chair near the death-chair, and, on being seated, in response to the warden's introduction, said: "Well, I wish everyone good luck in this world, and I think I am going to a good place, and the papers has been saying a lot of stuff about me that wasn't true. That's all I have to say." At the warden's bidding, he then arose, removed his coat, and, without the least display of emotion or nervousness, took his seat in the execution-chair, calmly submitting to the adjustment of the electrodes and binding-straps, himself aiding the proceedings by suggestions and fixing his body and limbs in proper position. Observing the nervousness of the prison officers who were adjusting the straps, he admonished them not to hurry, and to "be sure that everything is all right." He pressed his bared back firmly against the spinal electrode, and requested that the head electrode be pressed down more firmly on the top of his head, from which the hair had been imperfectly

clipped before he entered the room, remarking, at the same time, that he desired to perform his part to the best of his ability. The preparations terminated with a final moistening of the electrodes, the whole occupying, at most, between three and four minutes. Everything being seemingly ready, the warden signalled to his assistants in charge of the switches in the adjoining room to turn the lever which closed the circuit, and instantly sent the deadly current through the prisoner's body. The instant the contact was made the body was thrown into a state of extreme rigidity, every fibre of the entire muscular system being apparently in a marked condition of tonic spasm. Synchronously with the onset of rigidity, bodily sensation, motion, and consciousness were apparently absolutely suspended, and remained so while electrical contact was maintained. At the end of seventeen seconds Kemmler was pronounced dead, none of the witnesses dissenting, and the warden signalled to have the contact broken, which was immediately done.

For obvious reasons the only means of determining the question of death while the body was in circuit was by ocular demonstration, so that it cannot be positively asserted that the heart's action entirely ceased with the onset of unconsciousness, though most of the medical witnesses present thought that it did.

When the electrical contact was broken the condition of rigidity noted above was instantly succeeded by one of complete muscular relaxation. At the same time superficial discolorations resembling commencing capillary post-mortem changes were observed on the exposed portions of the face. The body remained limp and motionless for approximately half a minute, when there occurred a series of slight spasmodic movements of the chest, accompanied by the expulsion of a small amount of mucus from the mouth. There were no evidences of a return of consciousness or of sensory function, but, in view of the possibility that life was not wholly extinct, beyond resuscitation, and in order to take no risk of such a contingency, the current was ordered to be reapplied, which was done within about two minutes from the time the first contact was broken. The sudden muscular rigidity noted on the first closure of the circuit was again observed, and continued until the contact was again broken, when the opposite state of complete muscular relaxation re-occurred. The second closure of the circuit was inadvertently maintained for about seventy seconds, when a small volume

of vapor, and subsequently of smoke, was seen to issue from the point of application of the spinal electrode, due, as was subsequently found, to scorching of the edge of the sponge with which the electrode was faced, and from which the moisture had been evaporated by prolonged electrical contact. The odor of the burning sponge was faintly perceptible in the room. There was also some desiccation of the already dead body, immediately underneath the electrodes, especially under the lower one, which will be described in connection with the autopsy.

A careful examination of the body was now made, in which the medical witnesses participated to a greater or less extent. The radial pulse and heart's action had ceased, the pupils were dilated, and the corneæ were depressed and flaccid on pressure. In other words, William Kemmler was dead, and the intent and purpose of the law to effect sudden and painless death in the execution of criminals had been successfully carried out.

In the excitement and confusion of the moment, occasioned by the belief on the part of some that death was not complete, the second application of the current in Kemmler's case was maintained too long—nearly a minute and a half. If there was a spark of unconscious vitality remaining in the prisoner's body after the first contact was broken—there certainly was no conscious life—it was absolutely extinguished the instant the second and last contact was made. That the man was dead, however, comparatively long before the burning of the sponge and desiccation of tissue occurred, there is no reason to doubt.

The movements referred to were regarded by most of the medical witnesses present, including the writer, as similar in character to those which have occasionally been observed for a short time in animals experimentally killed by electricity, when the contact was too brief or the current strength insufficient, the animal dying, however, in a short time without regaining consciousness—movements which may properly be regarded as involuntary or reflex in character, following the too early interruption of the current, and in no sense a resumption of respiratory function, however much they may appear to be so to superficial observers, or to those not familiar with the phenomena referred to, as observed in experiments on lower animals. These movements are very slight in comparison with those usually exhibited by animals suddenly decapitated, and which usually continue a considerable period of time.

Dalton, in his work on *Human Physiology*,[1] refers to observations made by Robin on the reflex action of the spinal cord in the case of a criminal who was executed by decapitation, the head having been severed near the fourth cervical vertebra. Muscular contractions were produced about an hour after execution by scratching with a pointed instrument the skin of the chest at the areola of the nipple, while the right arm was lying extended by the side. On irritating the skin at the point and in the manner mentioned there immediately occurred a series of contractions of the pectoralis major, the biceps, probably the brachialis anticus, and lastly the muscles covering the internal condyle, causing the whole arm to approach the trunk, with inward rotation and half flexion of the forearm upon the arm, and bringing the hand toward the chest as far as the epigastrium. On replacing the arm and repeating the irritation as before, a similar defensive movement occurred. This experiment was repeated four times with similar results, except that each time the movement was less extensive; and finally scratching the skin over the chest "produced only contractions in the great pectoral muscles which hardly stirred the limb."

Observations made at executions subsequent to Kemmler's tend to show that reflex excitability of the voluntary muscles disappears much more rapidly after death by electricity than by any other method of sudden dissolution. In the case of McElvaine, executed at Sing Sing on February 8, 1892, Dr. Van Gieson found that reflex action of the voluntary muscles was absolutely unresponsive —to ordinary mechanical stimuli (see report of autopsy in case of McElvaine)—within two or three minutes after the last contact was broken.

That there were certain defects of a minor character in the arrangement and operation of the apparatus at the first execution by this method will be questioned by no one who witnessed it; but when it is recalled that, notwithstanding these defects, unconsciousness was instantly effected and death was painless—also that less than four minutes elapsed between the making of the first contact and the breaking of the last one, when Kemmler was absolutely dead—it will be conceded by unprejudiced minds that the object to be attained in the infliction of the death penalty, at least so far as relates to the individual—namely, sudden and painless death—was

[1] A Treatise on Human Physiology, seventh edition, p. 404.

fully realized in Kemmler's case; and had the first contact been maintained for a sufficient length of time in all probability there would have been no involuntary movement of the body after it was broken, and no unfavorable criticism of the result could then have truthfully been made.

Among other criticisms which appeared in the public press anent the execution of Kemmler was a reported declaration of the most illustrious electrical expert of the age, in which he was made to say that a serious mistake had been committed in not making contact through the hands instead of the head, the skull and hairy scalp being poor conducting media.

However logical this criticism may be from the standpoint of an electrician, it is not sustained by our knowledge of electro-therapeutics and of the physical properties of live bone. In what was intended to be an impersonal reply to this criticism, the writer, in his report to the Governor, took occasion to call attention to certain facts which are well known to physiologists and medical electricians —namely, that the arrest of the heart's action can be as readily effected by destroying or paralyzing the brain centre which controls such action as by attacking the heart itself; hence, by including the brain directly in the circuit, the action of the heart would probably be quickly arrested, while at the same time all the vital centres, including that of consciousness, would be paralyzed; also that the brain itself is very susceptible to the influence of electricity, and can be readily affected, sometimes to an alarming extent, by the passage into it through the skull of mild currents, such as are obtained from medical batteries; that the nerve tissues contain an excess of saline moisture, and hence are among the best of conductors, while the amount of organic matter contained in *live* bone is sufficient to render that substance a fairly good conductor. Further, it is not difficult to penetrate the hairy scalp by electricity if the hair be properly moistened, the conductivity of all the tissues of the body being largely dependent on the amount of moisture and salinity contained in them.

In each of the five cases following the Kemmler case[1]—namely, Slocum, Smiler, Wood, and Jugigo, executed at Sing Sing Prison, July 7, 1891, and Loppy at the same place, December 7, 1891—

[1] The head electrode originally suggested in Kemmler's case, but which, for some reason unknown to the writer, was not used, was designed to include the forehead, down to the eyebrows, in the zone of contact.

one electrode was so applied as to cover the forehead and temples, and the other, a larger one, the calf of the right leg, except in the case of Joseph Wood, in which it was applied to the left leg in consequence of the existence of an ulcer on the right one. The calf of the leg was selected because it furnished a broad area of thin skin. The point of contact of the body electrode is not of material importance. It may be applied to the hand, the foot, the calf of the leg, or to any other indifferent part of the body.

The electrodes were thoroughly wet with a solution of salt water before the current was turned on, and were moistened at intervals, when the current was interrupted, with the same solution thrown on them from a syringe.

The following summary of these executions, except as relates to Kemmler, is taken from the official reports made to the warden of the prison, the Hon. W. R. Brown, by Dr. S. B. Ward, of Albany, N. Y., and the writer, who appeared as medical advisers for the State:

The electro-motive pressure, as shown by the readings of the voltmeter, taken by Professor L. A. Laudy, of Columbia College, varied from 1458 to 1716 volts, while the ammeter showed a variation in current of from 2 to 7 ampères.

The preliminary preparations—that is, from the time the prisoner entered the execution-room to the closure of the circuit which rendered him unconscious—occupied, in Kemmler's case, approximately four minutes; in Slocum's case, three minutes and forty seconds; in Smiler's case, two minutes; in Wood's case, two minutes and forty seconds; in Jugigo's case, two minutes and fifteen seconds; in Loppy's case, two minutes and thirteen seconds; and in McElvaine's case, one minute and forty-nine seconds.

In each instance the prisoner walked deliberately to the chair, and quietly submitted to the application of the restraining-straps and electrodes without the slightest opposition or show of resistance, and also, save in the cases of Kemmler and McElvaine, without uttering a word in relation to the proceedings. With the single exception referred to (Kemmler's case), there was no exhibition of confusion or excitement on the part of witnesses, nor was there anything unduly repulsive in the executions themselves; on the contrary everything was done in a quiet, orderly, and dignified manner, in keeping with the solemnity of the occasion. The most striking and constant objective phenomena observed were instantaneous and

complete tonic rigidity of the muscular system on closure of the circuit and marked muscular relaxation immediately the contact was broken.

In Kemmler's case there were two contacts, through vertex and lower end of spine, lasting seventeen and seventy seconds, respectively, the last one being unnecessarily prolonged; in Slocum's case, two contacts—twenty-seven and twenty-six seconds; in Smiler's case, four contacts, three of ten seconds each and the fourth nineteen seconds; in Wood's, three contacts of twenty seconds each; in Jugigo's, three contacts of fifteen seconds each; in Loppy's case, four contacts of fifteen, eleven, fifteen and a half, and ten and a half seconds, respectively. (In all of these five cases contact was through the head and leg.) And in McElvaine's case, two contacts, the first one through the hands[1] (immersed to the wrists in liquid electrodes), lasting fifty seconds, and the last one through the head and leg, lasting thirty-six seconds.

In Kemmler's case there were chest movements, and possibly heart-beat, after the first contact (seventeen seconds); in Slocum's, chest movements and radial pulsation after first contact (twenty-seven seconds); in Smiler's, no movement of chest, but radial pulsation after three contacts (ten seconds each); in Wood's, no movement or pulse-beat whatever; in Jugigo's, a slight fluttering of radial pulse when final contact was broken, which rapidly ceased.

In all the cases except Kemmler's and McElvaine's contact was broken for the purpose of wetting the electrodes.

From the foregoing it appears that the time consumed in the preliminary preparations—strapping, adjusting electrodes, etc.—varied from four minutes in the first to less than a minute and a half in the last instance; that the number of contacts varied from two to four, and that the aggregate length of the contacts in each case varied from forty-five to eighty-seven seconds, at the end of which, if not before, in most instances, both conscious and organic life were absolutely extinct.

[1] In view of the opinions expressed by electrical experts of the highest standing, it had been previously agreed that contact should first be made by immersing the hands in two cells, containing tepid salt water, connected respectively with the opposite poles of the dynamo, and, in the event of this not causing cessation of the heart-beat, that recourse should be had to the mode of application through the head and leg employed in the previous executions at Sing Sing Prison. The apparatus was so arranged that either mode of application could be instantly employed at will.

In other words, the length of time which elapsed from the moment the prisoner entered the execution-room until he was absolutely dead, was, in Kemmler's case, eight minutes; in Slocum's, six minutes; in Smiler's, four minutes; in Wood's, four minutes and ten seconds; in Jugigo's, three minutes and thirty seconds; in Loppy's, three minutes fifty-three seconds and a half; and in McElvaine's, three minutes and fifty-eight seconds.

It appears, therefore, that the time actually consumed in each of these seven executions, from the moment the prisoner entered the room until he was absolutely dead, varied from eight minutes in the longest to three and a half in the shortest, whereas executions by hanging usually require from fifteen to thirty minutes. In fact, in hanging, it not infrequently happens that the heart continues to beat for that length of time after the fall of the fatal drop. Then, too, far more time is consumed in placing the prisoner on the gallows, pinioning his limbs, putting on the black cap, placing the noose about his neck, and carefully adjusting the knot under his left ear (from whence it sometimes slips at the critical moment, resulting in strangulation instead of a broken neck), than would be required for arranging the preliminary details of an electrical execution. During the preparation of this report the Associated Press dispatches contained an account of a hanging in which the criminal's head was almost completely torn from the body.

There are abundant reasons for believing that conscious life is destroyed so rapidly by electricity that the application of the current could be repeated several times within the interval that is known to elapse between the receipt of an injury or a peripheral sensory impression, and its conscious perception by the brain through the medium of the sensory nerves. In other words, the electrical current would travel from the point of contact to the brain many times faster than sensory impressions or nerve currents would, the rate of velocity of the latter being, roughly speaking, only about one hundred and fifty-five feet per second—a rate which is quite slow in comparison with the lightning-like velocity of electricity, which travels at the rate of millions of feet per second.

Thus it will readily be seen that an electrical current of lethal energy coming in contact with the body so as include the brain in the circuit would reach the latter and produce unconsciousness long, comparatively, before any sensory impression, at the point of contact or elsewhere, could be conveyed to and appreciated by that

organ, through the process of nerve-conduction, which, as has been shown, requires a distinctly appreciable period of time, the rate of transmission of painful sensations being even slower than that of ordinary tactile impressions.

A striking illustration of the relative slowness of nerve conduction as compared with electricity was shown in a series of experiments in instantaneous photography recently conducted by Professor Muybridge, in the following manner :

The lantern was used to make a series of instantaneous photographs, and in order to make the intervals between the exposures, as well as the periods of exposure, exceedingly short, the plates were exposed and stopped by means of an electric current. One very interesting series of pictures made was intended to illustrate the slowness of the brain in receiving impressions. Two women were employed : one stood in a bath-tub and the other stood on a raised chair and poured a bucket of water over the standing woman's head and shoulders. In order to make the shock more intense, Professor Muybridge had filled the bucket with ice-water, unknown to the victim, who would not have awaited the douche so patiently had she known what its temperature was going to be. One view showed the water tipped over and falling, yet not quite touching the girl's head. The next view showed the water splashing from her head and shoulders, and yet there were no signs of sensation. In the third picture she was just beginning to respond to the shock, and the subsequent picture illustrated the further phases of the response. The point of special interest, however, is in connection with the second view. The electric current had in that case first exposed the plate, and then after a very short interval had shut it off again ; that is to say, had acted twice with an interval of time between the two sufficiently long for the sensitive plate to take an impression of the view, and this after the ice-water had touched the woman's shoulders, and before she was conscious of it.

AUTOPSIES. *William Kemmler.*—The autopsy, held about three hours post-mortem, was by verbal direction of the warden officially in charge of the writer, and was performed by Dr. E. C. Spitzka, Dr. George F. Shrady, and Dr. W. T. Jenkins, of New York, and Dr. C. M. Daniels and Dr. George E. Fell, of Buffalo, N. Y. Notes were taken by Dr. Shrady, from which the following is compiled :

Body fairly well nourished. Rigor mortis marked, particularly in the muscles of the jaw, neck, and thorax, and gradually extending from above downward, involving the feet and legs last. Post-mortem discoloration existed over lower portion (posterior and lateral aspects of trunk) of body, and extended up as far as the anterior axillary line, also on the pendent surfaces of the upper and lower extremities. The upper extremities were partly flexed and rotated outward, the nails showing post-mortem lividity. There

was a seminal discharge, which, on microscopical examination was found to contain a large quantity of dead spermatozoa. There was marked post-mortem discoloration of the forehead about an inch in width, corresponding with the position of the strap, beginning at the hair on the left side and extending to the hair line on the right side. A corresponding discoloration from the pressure of the chin strap was also noted. There was an oval depression of the scalp upon the vertex, due to the pressure of the electrode, beginning at the anterior hair line and measuring four inches in its long and three inches and a half in its short diameter. Anterior to the posterior portion of the depression and in the immediate line there was a vesication an inch and a half in length, very superficial in character, crescentic in shape, and upon which the hair appeared to be slightly scorched. On the small of the back, corresponding to the level of the fourth sacral vertebra below and the second above, four inches and a half in vertical diameter and four inches and a half in transverse diameter, was a burn, presenting four concentric zones, of which the outermost had a pale area, corresponding to that of the rubber cap of the electrode, and one-fourth of an inch in diameter.

Succeeding this was a vesication, partial below and complete above, about an inch in diameter above and one-third of an inch below.

Then followed another zone, which was in its upper third a complete eschar, black in appearance, and its lower part showed desiccation of a greenish-brown color. The last or inner zone showed a number of vesicles, chiefly peripheral, and below the centre was a black eschar, half an inch in its vertical and five-eighths of an inch in its transverse diameter. Above was a tongue-shaped pale area, with a lateral projection to the left of the median line, extending about two inches, and an upper projection in the dorsal furrow, which was more sharply pointed, and which on its periphery showed a reddened portion, with here and there vesication. In addition, the back showed a number of depressions produced by the folds of the shirt and suspenders, such as are commonly found in dead bodies lying on the back.

On incising the skin over the sternum the blood which escaped was unusually dark and fluid, and remained so on exposure. The muscles of the thorax were of the usual color. "Tardieu spots" were noticed on the posterior border of the lower lobe of the left lung. When placed in water, more than half of the lung floated above the surface, showing a marked emphysematous condition. The bronchi were normal in appearance, and contained mucus and air bubbles. The right lung was adherent throughout to the diaphragm. In the middle lobe of this lung there were numerous well-marked "Tardieu spots." The heart weighed five ounces and three-quarters; its valves and substances were normal in appearance, and its ventricles were empty. The stomach contained a pint of undigested food. The blood from the cut surface of the liver was of a dark-crimson hue. The gall-bladder was distended with bile. The spleen was normal in size and appearance. The left kidney weighed three ounces and a half, and the right three ounces; both were markedly congested. There was no vermicular action of the intestines on exposure to the air or on irritation. The bladder was contracted.

The scalp, on being removed, showed the outer aspect of the vertex of the skull to be in a desiccated condition, corresponding with the site of the elec-

trode as previously noted, but of a larger area, being four by four inches, the zone of the scalp being only two and a half by three inches, the long diameter being antero-posterior. On removal of the skull-cap the dura was normal in texture, somewhat dull in color, particularly over the area corresponding with the zone of contact. In the pre-Rolandic region the meningeal vessels, measuring along the convexity antero-posteriorly four inches on the left side and three on the right, were filled with carbonized blood. On the internal aspect of the calvarium the meningeal vessels in the dura and their contents appeared to be black and carbonized. The carbonized vessels were so brittle that their ends were torn off with the calvarium, and presented a broken, crummy appearance. This carbonization was limited in an abrupt manner. The other meningeal vessels in the region corresponding to the outer burn, previously described, contained blood of a dark crimson hue. In the narrowest portion of this region was seen, a little posteriorly, in the median line, a dark discoloration sending out a right lateral prolongation three-fourths of an inch in the direction of the longitudinal sinus, and in width seven-eighths of an inch. Over the left cerebral hemisphere, one-third of an inch to the left of the median line, there was a deep carbonized spot corresponding with the desiccated portion of the calvaria. The pia and gyri were of a pale-bluff color; the rest of the cerebral cortex was normal in appearance. While observing this anæmic area it was noticed that its bloodvessels began to fill. The pia and arachnoid on the convexity of the brain were perfectly normal. An interesting fact was observed on handling the pons and medulla, in that they were found to be warm. By a thermometer inserted in the fourth ventricle, the temperature was noted at 97° F. The area of this temperature corresponded with an area of temperature on the back of the neck, which was noted at 99° F., three hours post-mortem, the temperature of the room being 83° F. The smaller vessels of the pia were ectatic. *Capillary hemorrhages were noted on the floor of the fourth ventricle, also in the third ventricle and the anterior portion of the lateral ventricle. The circumvascular spaces appeared to be distended with serum and blood.* The brain cortex in the area of contact was sensibly hardened to one-sixth of its depth, where there was a broken line of vascularity. The vessels over the corpus striatum showed enlargements in different parts of their ramifications. The pons was slightly softened. The spinal cord was removed entire, but showed no gross appearance of pathological condition. Portions of the brain and spinal cord were preserved for purposes of hardening and microscopical examination. The blood taken immediately after death showed, under the microscope, a markedly granular condition, almost suggesting an electrolytic dissolution of the red corpuscles.

A preliminary microscopical examination of portions of the brain and spinal cord, including specimens from all the cerebral lobes of both sides, segments of the cervical, dorsal, and lumbar regions of the spinal cord, with the connected nerve groups, was subsequently made by Dr. Spitzka, who states as follows:

The brain, spinal cord, and peripheral nerves appeared structurally healthy in every portion examined, except in the areas corresponding to the discolored (anæmic through extreme contraction of vascular channels) area of the Rolandic and pre-Rolandic regions, the ventricular surfaces, and the pons and medulla oblongata. The latter, which had been the seat of a remarkable post-mortem preservation of a temperature approaching that of the normal human body, were distinctly softer than the observer has been accustomed to find these parts in autopsies on persons of Kemmler's age, and performed so soon after death. The hemorrhagic spots in the fourth ventricle, which were strongly marked, were not accompanied by signs of parenchymatous rupture of larger vessels. Hence they may be regarded as having the same significance as the "*taches de Tardieu*" found on the surfaces of other organs—notably, the heart and lungs.

The peculiar softened vesicular zone of tissue underlying the outermost layer of the cerebral cortex being very fragile, will require extreme care in hardening and manipulation to enable me to obtain reliable specimens. It is noteworthy that this "destruction line" runs parallel to the free surface of the brain, and does not "dip" with the sulci.

Examination of the fresh specimens revealed the existence of vacuoles (probably gas-bubbles) in the ganglion cells and in the parenchyma of the "destruction line." From the fact that no hemorrhages had occurred in this softened area, it is a just inference that it was produced after life had become entirely extinct, for the continuance of a blood circulation in a softened brain area is incompatible with the bloodless appearance already noted and the absence of capillary hemorrhages in this very district, while they were present in those remote from the site of the electrode.

A more minute analysis will be completed, but cannot be reported until some future time.

That the "cooked" appearance of the muscular tissue of the back beneath the site of the electrode, and the desiccation of the skull and so-called "carbonized" state of the bloodvessels on the internal aspect of the calvaria over the area corresponding to the zone of contact, were due to the unduly prolonged second contact, together with failure to properly moisten the electrodes, there can be no question, no such results having been observed in any of the subsequent cases, the surface lesion in these latter being limited to superficial vesication of the skin at the points of application of the electrodes, as will presently appear.

All of the subsequent autopsies, including the microscopical examinations, were made by Dr. Ira Van Gieson, of the Pathological laboratory of the College of Physicians and Surgeons, and are here described substantially in Dr. Van Gieson's language.

Schichiok Jugigo.—The post-mortem examinations in this case were held four hours after death. The pupils were alike and moderately contracted.

The body was well nourished and unusually well developed. The anterior epithelial cells of the cornea had desquamated from the central portion by the action of heat. There was a bulging forward of the sclera of the left eye at the left sclero-corneal junction. Conjunctiva anæmic. The scalp and skin covering the neck had a dull, purplish hue. The skin of the anterior surface of the body was not discolored or ecchymosed. At the flexure of both elbows were a number of symmetrical linear ecchymoses, which were more marked on the right side. Also a curved, narrow ecchymotic line just below the outside of the right nipple. These probably were caused by the straps. At the posterior surface of the right knee-joint, and on the posterior and inner and upper surface of the calf, the epidermis was raised, wrinkled, and folded. At the flexure of the knee-joint the epidermis had been torn away to the extent of about an inch in diameter. The right lower extremity was flexed and bent more to the median line than its fellow. There is a slight discharge of thin, milky fluid from the urethra, and some still remaining in the canal. A sample of this fluid was taken for microscopical examination. Post-mortem rigidity well marked except in the arms, where it was only slight. The whole posterior surface of neck, trunk, arms, and lower extremities was of a dull, purplish hue. There were a few slight blisters on both temples, and both cheeks and eyelids. There were raised whitish streaks on both sides of the neck, just below the angle of the jaw.

The trunk was opened by a straight incision from the top of the sternum to the pubes. The fat was an inch thick over the abdomen. Muscles red and firm. Diaphragm at the left side was found at the level of the sixth intercostal space, and on the right side of the fifth intercostal space. Portions of small intestine were taken for microscopical examination.

Examination of heart: Auricles and ventricles flaccid and diastole and filled with fluid blood. The larger vessels were tied and the heart removed. The left ventricle was well filled with fluid blood but no clots. The auricles were the same. The blood was of the same color in the left ventricle as in the right. Valves normal. On opening the vessels, a large quantity of dark-colored liquid blood escaped, half filling the pleural cavity. There were no pleural adhesions. Lungs perfectly healthy, but slightly congested.

The spleen was found to be of normal size, the capsule smooth, pulp firm, and uniformly filled with blood, and the arrangement of the Malpighian bodies and splenic connective tissue entirely normal.

The pancreas was perfectly normal and a portion removed for microscopical examination.

Liver entirely normal, and a portion was also removed for microscopical examination.

The gall-bladder was filled with bile.

Left kidney: The capsule was non-adherent. It was rather large and the cortex of normal thickness. The kidney was uniformly injected, and the markings in the cortex were normal as to number and arrangement. The right kidney was in the same condition.

The stomach was empty, the mucous membrane pale; the rugæ were well marked and perfectly healthy.

The intestines were healthy. The small intestines were filled with semi-fluid feces. The large intestines showed the same condition.

The urinary bladder was normal and half full.

Examination of brain: The brain was exposed by a straight incision of scalp over the vertex from ear to ear, and saw cuts through the skull at a slight angle and at the level of the eyebrows. The scalp showed several old scars, and was slightly less adherent under those portions where the electrode was attached. The skull was symmetrical. The dura mater was normal and the vessels moderately dilated. The longitudinal sinus was found to be normal and contained some fluid blood. The brain was removed in the usual way. The pia mater was uniformly thin and transparent; the vessels in a medium state of congestion; subpial fluid small in amount. The blood was everywhere fluid in the meshes of the pia mater. There was no apparent difference in that portion which the electrode covered. The vessels at the base were perfectly normal. The ventricles contained a small amount of clear fluid. The roof and floor of the lateral ventricles were normal. The ependyma was smooth and transparent. White substance firm. Gray matter normal in every respect. Floor of the fourth ventricle at the upper half contained some dilated vessels, and on the left side there were a number of minute, radiating petechial spots from one to two millimetres in diameter. (See Fig. 2.)

The spinal cord was exposed in the usual manner. The external appearance of both cord and membranes was entirely normal, and the vessels contained, if anything, even less blood than usual, due probably to the short time that had elapsed between the occurrence of death and the holding of the autopsy. Sections half an inch apart showed nothing abnormal. A portion of both sciatic nerves was taken for microscopical examination.

Owing to the great length of time necessary to make this autopsy as completely and minutely as was done, and the subsequent careful microscopical examinations, it was not considered necessary to examine the brain and spinal cord in the other cases, especially as nothing of any importance had been observed in these organs in this case.

Harris A. Smiler.—Posterior surface of the body was of the same color, and also showed the same blisters as in the case of Jugigo. The left leg showed the same state of contraction.

The body was opened by the long, straight incision, as in the case of Jugigo. The diaphragm was found at the left side at the sixth intercostal space and on the right side at the fifth intercostal space. The left lung was slightly adherent at the apex. The heart was rather small. The left ventricle was somewhat firmer than the right, which latter was a little flabby. The auricles were distended with fluid blood. The right ventricle was empty and collapsed. The apex of the left lung was small and shrunken and retracted, and contained a few small, scattered, dense, tubercular nodules, some of which were calcified. Otherwise the lung was normal and resembled the preceding case. Right lung shows the same set of changes, but not so marked. Small ecchymotic spots (Tardieu's spots) were observed under the pericardium on surface of left ventricle. The walls of the ventricles

DR. MacDONALD'S ARTICLE ON

THE INFLICTION OF THE DEATH PENALTY BY MEANS OF ELECTRICITY.

FIG. 1.

FIG. 3.

Fig. 2.

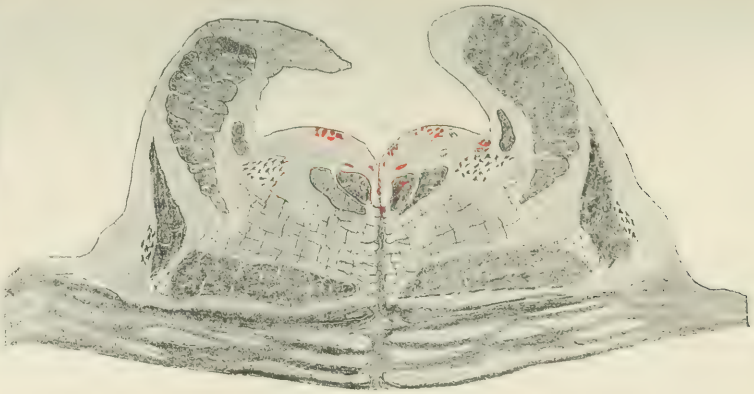

Fig. 4

Fig. 1 shows the construction of the "death chair," the method of applying the current through the hands in the case of McElvaine, and the attitude of the subject before receiving the contact.

Figs. 2, 3, and 4 show the character and distribution of the petechial spots in the floor of the fourth ventricle in the case of Schichiok Jugigo.

were of normal thickness. There were signs of an old endocarditis below the aortic valves. All the valves were healthy.

The spleen was small, and the pulp soft and normal.

The pancreas was normal.

The liver was normal both in size and texture.

The left kidney was greatly hypertrophied and the capsule non-adherent. The cortex was somewhat thickened, and the markings distinct and regular; moderately congested. The right kidney was small, two and a half by three-quarters of an inch in size, and weighed forty-eight grammes—less than an ounce and three-quarters. The tissue was normal, but the kidney was apparently congenitally small.

Intestines: Descending colon was filled with gas; ascending colon and small intestine pallid, and contained semi-fluid material.

Stomach contained undigested food, potatoes, etc. Mucous membrane pale and coated with a thin layer of slimy mucous. Bladder distended with urine. Walls and mucous membrane normal.

Examination of brain and cord deemed unnecessary. The blood was fluid everywhere, and darker than normal.

Joseph Wood.—Autopsy held at 1.25 P. M.

Body presented same appearance as in preceding cases. There was the same contraction of the legs and the same general appearance as in the others. Same condition of epithelium of cornea.

Median incision made as in other cases. Diaphragm attached to fifth intercostal space on both sides. There were a half dozen scattered petechial points found under the pericardium, half a millimetre in diameter. On the anterior surface of both ventricles and on the posterior surface of the left ventricle were five scattered similar points. On the posterior surface of the right ventricle were three similar small points and one larger, three millimetres and a half in diameter.

Heart normal in size, and condition of ventricles the same as in the case of Smiler. Both lungs were free from adhesions. The right lung, bronchi, pulmonary vessels, and lung tissue were normal, but somewhat more pigmented than usual. The substance of the lung was dry and dark pink in color. Heart muscles pale and firm, and of normal thickness. All the valves were normal.

Spleen was normal in size and dark red in color, and showed two thickened white patches on capsule. The pulp was firm.

The pancreas was normal.

The liver was normal in every respect.

Both kidneys normal in every respect.

Nothing abnormal was found in the intestines.

The gall-bladder was distended with normal bile.

The urinary bladder was of normal thickness, but the mucous membrane was considerably congested.

The brain and cord were not examined.

James J. Slocum.—Autopsy held at 1.45 P. M. There were the same blisters and external appearances as in the others. There was also the same appearance of cornea. Median incision was made as in the other cases.

Heart: Petechial spots scattered about as in the other cases, and were also observed under the pulmonary pleura. The left ventricle was firmly contracted, while the right was flabby. Both auricles, especially the right one, were filled with fluid blood. The left lung was free from adhesions. The upper lobe of right lung was slightly adherent. The left lung was in the same condition as the others, but slightly œdematous. The right lung was in the same condition. There was a well-marked large group of petechial spots at the centre of the anterior surface of left ventricle.

The spleen was of normal size, with the pulp soft, of dark red color, and somewhat congested.

Pancreas was normal both on the surface and on section.

The gall-bladder was half full of bile, and the common duct patulous.

The liver was normal in every respect.

The left kidney was very much congested, but normal in all other respects.

The right kidney was in a similar condition.

A careful examination of the intestines showed nothing abnormal.

The bladder was collapsed and normal.

The trachea was normal.

Microscopical Examination.—The practical results of the microscopical examinations are, that the passage of the electric current through the body is attended with no recognizable changes in its tissues or organs, excepting the local thermic changes in the skin at the points of application of the electrodes and some minute petechial spots on several of the organs.

Such a summary of the examination, however, seems insufficient without adding that it was determined by most exhaustive and modern investigation, and as there are apparently no recorded examinations of similar cases in medical literature, it seems not inappropriate to give the detailed report subjoined, showing in what way and to what extent the tissues were examined.

Specimens were taken from all four of the subjects, but the material from the Japanese criminal was especially selected for minute study, as it could be obtained the soonest after death.

Notes about the technical preparation of tissues are added at the conclusion of the report.

The examination of the cells in general. For this purpose the ciliated cells of the trachea, the liver cells, and the ganglion cells were studied especially with the oil-immersion lens. The physical properties of the protoplasm are in no way changed. The arrangement of the protoplasm, its volume, consistency, its behavior with light and staining reagents, are not at all different from the ordinary cell body. The same may be said of the constituent elements of the nucleus. None of the cells in any of the tissues examined show any signs of mechanical violence, such as tearing, fracture, or disintegration of the protoplasm. Neither does there appear to be any chemical change in the nucleus or cell body, as far as can be determined with micro-chemical methods. (The cells thus studied were prepared with solutions of corrosive sublimate, and also osmic acid.)

The blood. The blood cells are not damaged in any way by the current. The red cells have their normal size and shape. The white cells are uni

formly spherical and have the usual arrangement of the nuclei. The blood was very perfectly preserved, even the blood plaques being unchanged.

The stomach, small intestine, and kidney are unchanged, with the exception of a slight amount of post-mortem degeneration in the parenchyma cells. The stomach shows the appearances of functional activity.

The liver and pancreas and spleen show no changes.

The muscular system. The smooth muscles, studied from the gastro-intestinal tracts and the heart muscle fibres, are unchanged.

In sections of the eyelid lying directly beneath the electrode the voluntary muscle fibres are normal.

The bloodvessels are not altered. *The lungs* and *genital* organs were not examined microscopically. The fluid ejaculated from the urethra in the case of the Japanese criminal does not show spermatozoa.

The central nervous system was examined with special care. It has recently been determined that, during periods of muscular fatigue or prolonged muscular exertion, certain of the motor-ganglion cells are diminished in volume, which is recovered again during periods of muscular repose. Speaking roughly, this shrinkage of the ganglion cells during muscular fatigue represents a sort of mechanical equivalent of the work done by the muscles. Hodge (*Am. Jour. of Psychology*, May, 1888, 1889, and 1891), in inducing experimentally the effects of fatigue in ganglion cells by the prolonged action of weak electrical currents, found that the ganglion cells suffered a vacuolation, shrinkage in the volume of the cell body, and a still greater reduction in the size of the nucleus. This diminution of the ganglion cell was tangible enough and could be measured, and in some cases in Hodge's experiments with the current on cats the nucleus shrank to 43.9 per cent. of its original bulk.

Although it could hardly be expected that there would be time enough for the ganglion cells of these criminals to show traces of intense muscular contractions, yet the ganglion cells of the central convolutions and the anterior spinal cornua were very carefully examined to see if there would be any shrinkage coincident with the expenditure of so great an amount of muscular energy as was manifested during the contracts.

The ganglion cells in these regions, however, as far as can be determined by careful comparison with sections from the same regions in other ordinary healthy subjects, seem to be normal in size, or at least do not show any striking reduction in volume. A slight shrinkage may be present, but it would be almost impossible to determine it from the lack of a normal standard to make measurements with. Concerning this suspected change in the ganglion cells, then, it may be said that if there is any shrinkage at all, it is of very limited extent.

At the autopsy some minute petechial spots were found on the floor of the fourth ventricle (Fig. 2).[1] Microscopically, these spots are small masses of extravasated red blood-cells, situated, for the most part, in the perivascular spaces just beneath the ependyma.

The diagrams show the distribution and character of those hemorrhages

[1] The plates are from drawings by Dr. Van Gieson.

well enough, so that we may omit detailed descriptions of them. A few of the extravasations are more deeply situated and have a more significant position with regard to the important nuclear groups in the medulla. Fig. 3, *a*, shows one of the hemorrhages just on the outskirts of the sensory vagus, and other smaller ones close to the hypoglossal nuclei. The extravasation near the vagus is confined by the perivascular space of the median lateral artery of the medulla, which takes the course of the dotted line *x y*, in Fig. 3.

These hemorrhages look as if due to the passage of blood along the perivascular spaces, and out into the tissues after rupture of a small vein or capillary, but whether any especial significance should be attached to these hemorrhages, or whether they are caused directly by the current, or by intense muscular tension, or by manipulation in removing the brain, are questions extremely difficult to decide about.

The peripheral nerves. The sciatic nerves from both sides were examined without finding any change or difference between the sciatic of the electrode side and its fellow.

The delicate structures of the *retina* lying so close to the electrode are not altered.

The skin beneath the electrode is but slightly changed. The epidermis is absent or raised up from the corium, and has a dried-up appearance. The corium, structurally, is nearly normal; the connective-tissue nuclei are not shrunken, and stain well; but the connective-tissue bundles and fibres seemed changed chemically and behave abnormally with certain staining reagents. The sweat glands are degenerated to a considerable extent; they have a desiccated appearance.

It would then appear from this examination that, beyond the scalding effects of the electrodes, electric currents passed through the body in this way produce no change in the body except minute petechiæ, and it is doubtful if these are not some indirect or secondary consequence of the current. The results of the microscopical examination of the two remaining subjects—Loppy and McElvaine—are corroborative in every way of this examination.

It seems proper to add that the central nervous system of only one of these four cases was removed, because nothing was found in it which would receive any further elucidation from the examination of the other three cases.

All of these variously hardened portions of the tissues were imbedded in celloidin and sections stained appropriately with several different methods, such as Weigert's method, double staining with hæmatoxylon and eosin, and also with the picro-acid fuchsin method.

Martin D. Loppy.—Autopsy held as soon as possible after breaking of the last current. Subject somewhat below the medium stature. Body well nourished. Muscular system well developed. Rigor mortis almost completely, if not entirely, absent, except in the right leg, where there is sufficient muscular rigidity to hold the leg slightly adducted and flexed at the

knee-joint. The mouth and nostrils are perfectly natural, and show no traces of the extrusion of fluids or frothy material. About a drachm of viscid fluid, wetting the skin of the pubic region, has escaped from the urethra.

There are no discolorations, contusions, or other marks on the skin, except in two places, viz. (1) at the flexure of the right knee, where the lower electrode was applied, and (2) upon the cheeks, corresponding to the position of one of the restraining straps. The unexposed surfaces of the skin are everywhere else smooth, white, rather thin, and delicate in structure, and show no settling of blood in the dependent portions of the body.

At the flexure (or back part of the knee-joint), where the *lower electrode* was applied, there is a diffuse reddish discoloration of the skin about three inches and a half by five inches in diameter. This region of the skin shows a very moderate, superficial, irregular separation of the thin outer scarf skin or epidermis from the true and thicker skin beneath. The epidermis or scarf skin in this region is raised up and corrugated, and it can be easily rubbed off with slight force. When the whole thickness of the skin is cut through with a knife it can be seen that this change is quite superficial, affecting the outer scarf skin only, and does not damage the corium or true skin beneath to any appreciable extent.

The corium or true thicker skin underlying the electrode region is soft, pliable, not desiccated, and seems to be normal in every way, except that it is somewhat congested, which produces the reddish discoloration in this region.

The layer of fat beneath the skin in the electrode region is in no way changed or damaged.

The *head electrode* has left no traces upon the skin. The forehead and scalp beneath the electrode are perfectly white and natural, and there are absolutely none of the superficial alterations referred to above at the knee-joint.

There is redness and swelling of both cheeks just beneath the eyes, which is very moderate in extent and not enough to make any distortion of the face. This was occasioned by pressure against one of the leather restraining straps during the periods of muscular activity when the current was applied.

The right eye had been lost some time previously during life. The eyelids are closed; skin of eyelids intact. Anterior corneal epithelium of the left eye cloudy, but not detached. The eyeball is perfectly natural; it has the proper tension and contour.

The interior of the mouth is normal. The tongue and the teeth show no signs whatsoever of injury.

The body was opened in the usual way. The abdominal organs were critically examined first, then the thoracic viscera, and finally the brain and upper portion of the spinal cord.

The stomach is normal; it is much contracted, rather small; mucous pallid; fundus smooth; pyloric extremity folded.

The small intestine is normal, contracted, upper portion nearly empty, lower portion partially filled with semi-fluid fecal matter.

The spleen contains, just beneath the normal capsule, several larger and

smaller hemorrhagic spots, from one millimetre to three millimetres in diameter, such as are not infrequently found after death from a variety of causes. The substance of the spleen is normal.

The pancreas is normal in size and texture.

The liver is normal in size, and uniformly filled with blood: cut surface smooth, stroma and parenchyma unchanged. Gall-bladder normal; partially filled with bile.

The kidneys are of medium size; capsules non-adherent; vessels well filled; the cortex is normal in thickness, and has its constituent elements properly arranged.

The supra-renal capsules are unchanged.

The urinary bladder shows no abnormities; it is much contracted and its mucous pallid.

Heart: The left ventricle is firmly contracted and empty; both auricles and the left ventricle are flaccid. The right ventricle contains a little fluid blood. Two small thickened patches of old endocarditis are at the base of the aortic valve. The heart muscle is firm and normal.

The diaphragm stands at the level of the sixth intercostal space on the left side, and at the sixth rib on the right side.

The lungs are non-adherent, pale, normal, in size, texture, and consistence.

The trachea, œsophagus, and aorta are normal.

The vocal cords are in cadaveric position.

Brain and spinal cord: The brain was removed in the ordinarily practised method, and the scalp, pericranium, and skull show no effects of the head electrode. Skull brachycephalic. Dura mater of convexity normal. Longitudinal sinus normal; contains a little fluid blood. Pia mater not thickened, but contains a number of nebulous striæ and opacities uniformly scattered over the whole convexity. There was considerable subpial fluid. Both this change in the pia mater and the increased subpial fluid are referable to some preëxisting condition, and are such as are not infrequently found in persons having the age and intemperate habits of this subject.

Convolutions of the brain have the normal topographical distribution; substance of brain normal, both as to the conditions of the bloodvessels and the character of both the gray and white matter. Vessels at base normal. Lateral ventricles contain a slight amount of clear fluid. Ependyma of all ventricles unchanged. Floor of fourth ventricle normal.

The right optic nerve—corresponding to the lost eye—is atrophied, having about half of its ordinary thickness. The medulla, pons, and basil ganglia show no abnormities. (These were referred to Dr. Brill for microscopical examination.)

There is an old healed fracture extending across the right orbital process of the frontal bone, one centimetre from the median line, which extends backward and outward nearly to the apex of the petrous portion of the temporal bone for a distance of about five centimetres. The dura mater along the track of this old fracture is slightly thickened (to the extent of three millimetres) and adherent to the bone.

The superior portion of the spinal cord shows no changes in its coverings, vessels, or substance.

The muscles were critically examined to determine if there were any signs of violence induced by the current or the contraction it caused, and with a negative result. The muscles of the chest, abdomen, and calf were normal, bright red, firm, and show not the slightest tearing or rupture.

Remarks: In looking carefully over the details of this autopsy and comparing this report with that of the four previous cases of infliction of the death penalty by electricity, the following points may be noted:

1. The passage of an electrical current of the pressure employed in these cases (of approximately from 1400 to 1700 volts) and in this manner does not do any damage to any of the internal organs, tissues, or muscles. None of these parts are lacerated or changed in volume; neither are there any gross chemical or morphological changes or alterations of their finer structural features.

2. The local thermic effects of the electrodes are limited to the outer scarf skin. The true skin beneath is not damaged to any appreciable extent. The epidermis or scarf skin may be separated from the deeper skin, and resembles in this way an ordinary blister from which the fluid has escaped. The blisters about the knee in this case are like the ordinary familiar water-blisters on the hands from friction, or the blisters which physicians often have occasion to produce in their treatment of disease. Where the skin has been exposed to the weather, and is tougher and more resistant, as on the forehead and scalp, the blistering does not take place, whereas in the more sensitive delicate skin of unexposed surfaces, as at the fold of the knee-joint or the calf, the superficial blistering is more readily induced. Compared with the four previous executions, the changes in the skin induced by the local thermic action of the electrode are even still less in degree in this case, and may be pronounced altogether trivial.

3. The occurrence and distribution of the minute hemorrhagic spots (described more completely in the previous cases) are not a uniform or constant feature in these cases, and as they are found after death from the greatest variety of causes, they cannot properly be regarded as positively characteristic of death by this method.

4. The attitude of the body on the autopsy table is peculiar and very uniform. When the electrodes are applied at the knee flexure, the leg is invariably slightly flexed at the knee and a trifle adducted.

Charles McElaine.—Approximately two to three minutes after the breaking of the last current the reflex action of the voluntary muscles was tested as follows:

1. The patellar reflex was tried in the usual way without any response from the muscles either in the knee of the electrode side, which was rigid, or the knee of the other side, which was relaxed.

2. The cornea was touched with the finger without eliciting any exertion from the muscles of the eyelids.

3. The nipples were pinched with a forceps, and the surrounding skin was scratched and lightly scarified with fine scissors; but this did not induce any

motion of the muscle groups, or even any fine fibrillary twitching of the individual fibres of the subjacent muscles.

4. One of the muscles of the abdomen (the rectus) was exposed, but showed no activity when cut or irritated with the knife. Voluntary muscle reflexes to ordinary stimuli were absent. The activity of smooth or involuntary muscle was *not* interfered with; thus peristalsis of the intestines and the cremasteric reflex could be excited.

After these tests the autopsy was made immediately.

I. *External appearances of the body.* The subject is a trifle below the medium stature, well nourished, has no deformities, and has well-developed muscular system. The lips are pallid, but the nostrils and interior of the mouth are perfectly natural. The left eyelid is quite firmly closed, while the other lid is partly open. The delicate membrane coating the front of the cornea has not been disturbed by the head electrode. The pupils are about midway open, nearly uniform, and measure about two millimetres and a half in diameter. The eyeballs are natural. There is no distortion of the face, such as muscular contractions or marks of violence, to mar the countenance.

Rigor mortis is marked only where the current was applied; the electrode leg is flexed at the knee-joint at an angle of about 90°, and is a trifle adducted. The arms, which received the first contact, are less flexed than the knee-joint, and the fingers are almost completely closed in the palm of the hand.

There are no evidences of a seminal emission.

The skin is everywhere perfectly natural, except at the points of application of the electrodes, and here there are some superficial changes in the outer layers of the skin. In these places, at the back part of the right knee-joint and on the upper surface of the wrists (where the first contact was made), the thin outer skin scarf is wrinkled, and raised up or partially detached from the true or deeper skin beneath.

These superficial patches on the skin in the electrode regions are not extensive, and do not measure more than two to two inches and a half in diameter. In order to see if these patches involved the skin beyond the outer layers, the whole skin was cut through with a knife and looked at critically. It was then seen that the deeper layers of the skin were but very little involved. The deeper or true skin is in places in these patches a little drier than it ought to be, and this is all. The layer of fat beneath the slightly superficially damaged patches on the skin is perfectly normal in every way.

II. *Examination of the thoracic and abdominal organs.* There is very little to be said about the examination of these organs other than that they were subjected to a thoroughly detailed systematic scrutiny, and nothing abnormal was found either about their shape, consistency, or texture, except the left ventricle of the heart was firmly contracted, while the right ventricle was flaccid. Valves and heart muscle normal.

The left kidney (measuring 6 by 13 centimetres in diameter) contained a number of larger and smaller cavities (the largest one centimetre and a half in diameter) near the region of the pelvis, some of which contain calculi.

Such a condition of the kidney is due to an old chronic previous process, and is to be expected in persons who develop calculi in the kidney.

All of the viscera and organs of the thorax and abdomen were examined.

III. *The central nervous system.* The brain is brachycephalic and is perfectly normal as to its coverings, in the disposition and structure of its bloodvessels, in the arrangement of the convolutions, fissures, and sulci, and in the texture and relative distribution of the gray and white matter. The fourth ventricle and its floor are normal. The superior portion of the spinal cord is normal. (The brain was not completely dissected, in order that it might be transported to Professor Donaldson, of Clarke University.) The brain with the pia weighed, on scales weighing to half a gramme, 1442 grammes. The dura mater weighed 52 grammes.

IV. *The muscular system.* The muscles are red and firm and show no signs of tearing, rupture, or hemorrhage.

Conclusion.—As might naturally have been expected, the adoption and successful inauguration of this new method of capital punishment has not been accomplished without encountering vigorous opposition, amounting in some instances to violent and apparently malicious denunciation of the acts and motives of those who were called upon to act as principals in carrying out a law the establishment of which must eventually be regarded as an important advance in criminal jurisprudence in the direction of a higher civilization. But even to day, despite the wide publication of unofficial reports, proclaiming the method a failure and apparently designed to invest it with an air of repulsion, brutality, and horror, it is conceded by substantially all unprejudiced individuals who have witnessed these executions, or who are reliably informed as to the facts relating thereto, as well as by a large and increasing proportion of the daily press that the intent of the law to effect sudden and painless death has been fully attained in each instance. That a method of judicially inflicting the penalty of death in punishment of the crime of murder will ever be devised which in its operation shall be divested of that sense of awe and dread usually experienced, especially by laymen, when in the presence of death, is not to be expected; and even were it possible, the wisdom of such a method might well be questioned, so long as the welfare and protection of society require the infliction of such a penalty to deter men from committing murder.

It should be borne in mind that up to the time of Kemmler's execution there was no recorded instance of death having been deliberately effected on the human subject by this method, the only

knowledge on the subject being derived from experiments on lower animals and from observations in cases of death from accidental contact with live electric wires and from such deductions as could logically be made from technical knowledge of electro-motive force; hence the first execution by electricity was necessarily to some extent experimental and attended with possible elements of uncertainty, owing in part to crudeness in the law and in part to certain minor defects in the arrangement and operation of the apparatus and to the inexperience of those in charge. In spite of these defects, however, the important fact remains that the prisoner was instantly rendered unconscious and death was painless.

Of the nearly one hundred physicians, many of whom are eminent members of their profession, who have witnessed one or more of these executions, only two have dissented in any essential particular from the conclusion that this mode of inflicting the death penalty destroys conscious and organic life, both aggregate and segregate, with a suddenness and thoroughness that is not attained by any other known method. One of these gentlemen, a distinguished surgeon and an ardent opponent of capital punishment in any form, witnessed the Kemmler execution, and while concurring in the general opinion that unconsciousness was instantly produced by the first contact, still thought that there was a possibility that resuscitation might have been accomplished by means of hypodermic injections of brandy—that is, after the first contact. The other dissenting physician, who is an advocate of the execution of criminals by means of suffocation with toxic gases, witnessed the execution of McElvaine. He also agreed that unconsciousness was instantly produced by the first contact, but thought that the second shock was required to affect absolute death. There is no reason to doubt the sincerity of either of these gentlemen.

Dr. Van Gieson, in his official report of the McElvaine autopsy, in speaking of the rapid abolition of the reflex action of the voluntary muscles, says:

> This tends to show how superlatively complete and far-reaching the effects of the currents are in abolishing life, not only in the concrete form, but also in the integral activities of the body which in other forms of sudden and violent death is liable to persist for a time after life is extinct. From observations at this execution, as well as at the subsequent examination of the body, the current appears at first not only to extinguish life in the ordinary sense of the word, so far as consciousness, feeling, and volition are concerned,

with overwhelming suddenness, but reaches beyond this and destroys the energies of the individual component parts of the body, so that they cannot be raised into activity by artificial mechanical stimulation, as is usually the case in sudden violent death.

The experience thus far had has demonstrated that the only reasonable objection to so-called "electrocution"—at least so far as the individual is concerned—as compared with other modes of inflicting the death penalty, lies in the fact that the application of a current of lethal energy results in the generation of heat at the point of contact, and, if sufficiently prolonged, is attended with vesication of the skin at that point, owing to the temperature of the moisture on the electrodes becoming elevated to the boiling-point, while if the sponges are allowed to dry out, local burning may occur. This occurs, however, if at all, toward the end of the contact and long, comparatively, after conscious life is extinct; hence the objection is, after all, merely a sentimental one. Furthermore, it may reasonably be assumed that a method of avoiding this local thermal effect will soon be determined.

Finally, as compared with hanging, in which death is frequently produced by strangulation, with every indication of conscious suffering for an appreciable time on the part of the victim, execution by electricity is infinitely preferable, both as regards the suddenness with which death is effected and the expedition with which all the immediate preliminary details may be arranged. By the latter method the fatal stroke renders the subject unconscious in an infinitesimal fraction of a second—so small as to be beyond the power of the human mind to estimate it—while, at the same time, it destroys both conscious and organic life in a shorter space of time than is possible by any other known method. In other words, it is the surest, quickest, most efficient, and least painful method of inflicting the death penalty that has yet been devised.

IN MEMORIAM.

HENRY I. BOWDITCH, Honorary Member.
Died at Boston, Mass., Jan. 14, 1892, æt. 84.

MORELL MACKENZIE, Honorary Member.
Died at London, Eng., Feb. 3, 1892, æt. 55.

DANIEL D. BUCKLIN, Permanent Member.
Died at Troy, April 9, 1890.

G. L. HALSEY, Permanent Member.
Died at Unadilla, Feb. 17, 1891, æt. 72.

GEORGE P. SALMON, Permanent Member.
Died at Hudson, April 11, 1891, æt. 60.

PAUL H. KRETZSCHMAR, Permanent Member.
Died at Brooklyn, April 27, 1891, æt. 44.

PETER V. S. PRUYN, Permanent Member.
Died at Kinderhook, May 2, 1891, æt. 51.

ROBERT FRAZIER, Permanent Member.
Died at Camden, May 10, 1891, æt. 74.

GEORGE N. BURWELL, Permanent Member.
Died at Buffalo, May 15, 1891, æt. 71.

B. FORDYCE BARKER, Permanent Member.
Died at New York, May 30, 1891, æt. 73.

L. J. AMES, Permanent Member.
Died at Mount Morris, May, 1891, æt. 76.

FRANK HAMILTON POTTER, Permanent Member.
Died at Buffalo, July 16, 1891, æt. 31.

JOHN J. FLINT, Permanent Member.
Died at Albany, July 19, 1891, æt. 72.

DANIEL PARDEE, Permanent Member.
Died at Fulton, Aug. 25, 1891, æt. 57.

SAMUEL AVERY, Permanent Member.
Died at Phœnix, Sept. 20, 1891, æt. 80.

FREDERICK S. GREENE, Permanent Member.
Died at Coxsackie, Sept. 30, 1891, æt. 71.

CHRISTOPHER V. BARNETT, Permanent Member.
Died at Coxsackie, Nov. 11, 1891, æt. 73.

NATHANIEL C. HUSTED, Permanent Member.
Died at Tarrytown, Nov. 19, 1891, æt. 66.

SIMEON TUCKER CLARK, Permanent Member.
Died at Lockport, Dec. 24, 1891, æt. 55.

OBITUARIES.

I. Obituary Notice of Dr. Frederick S. Greene,

COXSACKIE, N. Y.

By A. BEACH, M.D.,

COXSACKIE.

In presenting this sketch to the medical profession, of an esteemed physician and honored citizen, no attempt will be made to enter into a detailed statement of the many traits of character that endeared him to those who knew him, but some of the most important events connected with a life of more than ordinary interest will be briefly considered.

Frederick S. Greene was born at Indian Fields, N. Y., October 30, 1820, and died at Coxsackie, N. Y., September 30, 1891.

The Doctor was the oldest of a family of nine children, there being six boys and three girls. Two of his brothers read medicine, and the other three were farmers. Of this large family only four survive him.

His father was a farmer of limited means, consequently the Doctor's opportunities to obtain a preliminary education were limited an attendance at the district school during the winter terms, but early in life he developed studious habits, and by some means acquired a fair knowledge of Latin, Greek, and other necessary branches preparatory to reading medicine.

He began his medical studies with Dr. James P. Boyd, of Albany, N. Y., at the age of twenty-two years, and successfully passed his examination for the degree of Doctor of Medicine at the Albany Medical College several months previous to the expiration of the requisite three years' studentship. While waiting for his diploma, which was awarded him January 17, 1846, he secured the position of resident physician in the Albany Almshouse. His experience there was of great use to him in the long life of professional toil that he immediately entered after graduating, by establishing himself without money or influence at Medway, N. Y.

There his ability as a physician was soon recognized by the inhabitants, and in a short time, owing to a fortunate circumstance, he had an extensive and lucrative practice. It was about the time that the supporting system of treatment of debilitating diseases was attracting the attention of the profession, and the successful manner in which he treated several cases of typhoid fever soon after his arrival gave him an enviable reputation amongst the people and neighboring physicians.

October 23, 1850, he married Miss Sarah D. Gritman, of Dutchess County, N. Y. Mrs. Greene was an estimable lady, and it is but just to her memory to say that it was through her influence and assistance that much of the Doctor's subsequent prosperity can be traced. Their happy married life was terminated by her death, August 15, 1885. Mr. D. Geroe Greene is the only surviving member of their family of three children.

As the years passed, his practice became so extensive that it was necessary to have an assistant, and Dr. I. J. Van Holsen, a former student, was selected as a partner. In 1864, leaving Dr. Van Holsen at Medway, he came to Coxsackie, where his reputation as a skilful physician and good citizen had preceded him; consequently he almost immediately occupied a prominent position in medical and social circles.

His practice soon became so laborious that in 1866 he took Dr. P. B. Collier into partnership. After Dr. Collier's withdrawal from the firm, two years afterward, Dr. C. V. Barnett, of Windham, N. Y., came to Coxsackie and entered into partnership with Dr. Greene, December 17, 1868. These two able physicians worked together until May, 1880, when Dr. Barnett was forced to withdraw from active practice on account of an attack of apoplexy.

May 31, 1880, it was my privilege to become associated professionally with this noble man. From that time, as the many traits of his character were gradually unfolded to my observation, regard gave way to veneration, until at the time of his death, the loss to me could hardly have been greater had he been my father.

During almost one half-century of active practice the Doctor's reputation as a physician was second to none in this vicinity, and by many neighboring physicians he was called either as consultant or to take charge of difficult cases.

He joined the Greene County Medical Society in 1857, and for many years was one of its most active members. From 1862 to

1864 he was vice-president, and subsequently president of the Society.

He was appointed delegate to the American Medical Association in 1872. At the annual meeting of the State Medical Society, February, 1880, the Doctor was made a permanent member, and from that date was a regular attendant at the annual meetings of that organization.

Dr. Greene was elected a vice-president of the Alumni Association of the Albany Medical College in 1877. Again, in 1883, he was elected first vice-president, and as the president of the Association (Dr. J. S. Mosher) died in the course of the year, Dr. Greene became acting president, and at the succeeding annual meeting of the Association he presided and delivered the address as president.

It was not simply due to the fact that he was a skilful physician that he endeared himself to those with whom he came in contact, but it can also be attributed to the active interest he had in everything that promised to be of any public benefit.

At the time of his death he was president of the Riverside Cemetery Association, an active member of the Coxsackie Board of Trade, and president of the Board of Education. These organizations owe much to his energy and aid. He recently, almost unaided, succeeded in funding the debt of the Riverside Cemetery Association, and it was a matter of deep concern to him that the members did not take a more active interest in its financial affairs.

He was an acknowledged leader in educational matters. Since the organization of our Union Free School and Academy he spared neither time, influence, nor money to bring that institution up to its present prosperous condition. In his death the inhabitants of Coxsackie and the medical profession of this vicinity have sustained an irreparable loss.

He was noted for his generosity, and was ready at all times to assist those who were suffering for the necessities of life. To him it was a matter of secondary consideration what the financial standing of a patient was. He stood ever ready to respond to the calls for the alleviation of the sufferings of those that depended upon him. Many families in needy circumstances can testify to his kindness to them in that respect. The poor more than any other class have reason to regret the death of this benevolent physician. He won the confidence and respect of his patients by the interest he took in all their affairs aside from their physical infirmities.

His diagnosis of disease was made by exhaustive physical examination, and this, with a superior knowledge of the therapeutic effect of drugs, accounts for the successful results obtained in the practice of the profession he loved. He at all times was a thorough student of medicine, taking an active interest in the latest medical works and periodicals.

For many years he had been a regular attendant and officer in the M. E. Church. His gift of a magnificent pipe organ to the church is a testimonial of the interest he took in religious matters.

Socially he was a pleasant man to meet. His presence inspired respect at all times, and his words were eagerly listened to.

Physically, considering his age, he was a man of remarkable vigor. He was ambitious to complete fifty years of active professional life, and had it not been for the accident that caused his death he undoubtedly would have been able to do so, with many years to spare to enjoy the results of his industry and frugality.

July 7, 1891, he started for quite an extensive trip through the Western States, came back August 14th and resumed his practice with renewed vigor. Just one month after, September 14th, while driving through West Coxsackie, his horse, which was young and spirited, became unmanageable and ran away. In making an effort to save himself the Doctor jumped from the vehicle and sustained a compound comminuted fracture of the left tibia and fibula, just above the ankle-joint. The wound was treated antiseptically, and the fracture reduced by Dr. C. V. Barnett and myself. It soon became evident that his whole system was seriously affected by the shock. September 17th, his friend, Dr. A. Vander Veer, called on him, and from time to time neighboring physicians came in. The fracture and wound from the beginning did well, and for one week we had hopes of his recovery, but his heart began to give evidence of failure by its weak, intermittent action, and his vital forces gradually gave out, until, September 30th, at 5 o'clock P.M., he died of asthenia. Thus lived and died Frederick S. Greene, one of Nature's noblemen, a man respected for his many virtues and an ornament to our profession.

His life was worthy of emulation, and his death an admonition to us to be prepared, as he was, to meet our Maker.

II. Obituary Notice of Christopher V. Barnett, M.D.,

COXSACKIE, GR., N. Y.

By WALTER B. CHASE, M.D.,

BROOKLYN.

[Prepared for the Medical Society of the County of Greene.]

Dr. Christopher V. Barnett, son of John and Eleanor Voorhis Barnett, was born February, 23, 1817, in the town of Roxbury, Delaware County, N. Y., and died at Coxsackie, Greene County, N. Y., November 11, 1891, at the age of seventy-four years and nine months. In 1834 his father and the family removed to Hobart, Delaware County, where he remained on the farm, attending the district school in the winter. His life was laborious from boyhood to mature years, and though lacking in opportunities, he was not wanting in energy or application. Not satisfied with the meagre advantages for education, he sought and, by his own effort, succeeded in acquiring a fair education, after which he began the study of medicine with Dr. Howard, of Hobart, graduating from the medical department of the University of the City of New York in 1844, soon after which he commenced the practice of medicine at Lexington, Greene County, N. Y. His genial and manly qualities, together with the recognized fact of his capabilities as a practitioner, soon led to his thorough establishment in business. His ride was long and arduous, if not remunerative, and his services were in demand beyond the limits of his immediate neighborhood. After a few years of successful practice here he removed to Windham in 1849, about ten miles from Lexington, which was the centre of a more thickly populated district, and where he found greater scope for the practice of his profession, in which he became so eminent.

During his residence in Lexington he married Mary A. Howard, of Hobart, daughter of his preceptor, who yet survives him. Windham was his home until 1868, nearly twenty years, when, to the great sorrow of his numerous friends and patrons, he took up his residence in Coxsackie, as partner of the late Dr. Frederick S. Greene. Here, as in Windham, his worth as a man, and his skill as a physician and surgeon, commanded the confidence and esteem of all who knew him. Here he labored with great acceptance and

success, in the closest intimacy with Dr. Greene, until 1880, when he suffered an attack of hemiplegia. For a time little hope was entertained of his recovery, and though his convalescence was slow and imperfect, he recovered a fair degree of physical health, though not sufficient to allow him to resume the work of his chosen profession. Doubtless these were weary years of waiting for one used to a very active life.

The day previous to his death he was able to go down town, and appeared to be in usual health; after his return home he was taken with distress in the epigastrium, and died at noon the day following from cardiac asthenia.

Dr. Barnett was possessed of a splendid constitution, with great powers of endurance, and but for the disease of the nervous system, induced by the attack of apoplexy, it is probable he would have reached a more advanced age, with full capabilities for both labor and enjoyment. He was of a social disposition, warm hearted, and generous, and his attachments were deep and abiding. *No man* ever had a *truer* friend. In his middle life, while residing at Windham, there was a daughter born. She was the centre of paternal affection, and about her his hopes and his life centred. She was his almost constant companion and associate. She was in character very like her father, and as she was budding into womanhood she gave promise of being all her father had hoped her to be. But, alas! she fell a victim to an epidemic of cerebro-spinal meningitis, and died shortly after their removal to Coxsackie. His grief was extreme. The hope of his life and the expectation of his declining years had departed, and never after did he possess that buoyancy of feeling which had been such a striking element of his character. This great sorrow he bore with Christian fortitude and resignation.

In personal appearance Dr. Barnett was of medium height and size, rather nervous in his movements, with somewhat angular features, and a physiognomy which bore a striking resemblance to Abraham Lincoln, though more attractive and pleasing. The facial lines were clearly drawn, and the expression of his countenance indicated strength of character, culture, and intelligence.

As a man he was active, self-reliant, conscious of his ability, but modest in his estimate of it, possessed of large executive ability, of sound judgment, logical in his deduction, of perfect self-control, and a born leader among men.

His sense of propriety was acute, and love a cordial attribute of

his character. Whatever cause he espoused, it was from conviction, and not of sentiment, and he gave it the full measure of his influence, never counting the consequence.

His attachments were strong, his resentments positive. A single incident in his life, known to but few, illustrates his unselfish devotion to principle. Though not known as an Abolitionist, he was in active sympathy with the colored race in bondage and oppression. This incident was connected with the operations of the underground railroad. United States officers were in hot pursuit of a fugitive in New York City. Horace Greeley put the colored man on board a boat for Albany, believing he would thereby elude his pursuers. Mr. Greeley, hearing instructions had been telegraphed to Albany to arrest the man on his arrival, took train on the Hudson River Railroad, boarded the boat, took the fugitive off at Kingston, where he was duly forwarded to Windham, *via* Shoadoken, where he was placed in the care of a wealthy and influential citizen. This gentleman was so timid as to the possible consequences of the "runaway" being found in his custody that he appealed to Dr. Barnett for advice, who quickly relieved his neighbor of all embarrassment by taking him to his own care and keeping, when in due time he was conducted to another station of the mysterious underground railroad in his northward flight.

His career as a medical man you are all to a greater or less degree familiar with. Born of humble parentage, by patience and diligence he won a position among his professional brethren alike honorable and influential. As a physician he was quick and accurate in diagnosis, fertile in resources, and wise in his adoption of therapeutic measures.

He possessed the rare quality of inspiring his patients with hope, the far-reaching and salutary influence of which is of inestimable value. But it was in the domain of surgery he achieved his highest distinction. It is no reflection on the recognized ability and skill of the gentlemen composing this Society to affirm that Dr. Barnett was the peer of any member.

His advice and judgment were sought far and near by the laity and the profession in serious surgical cases, and he was always master of the situation. As an operator he was bold, but conservative. He never imperilled a life for the sake of an operation. His resources were broad, and his adaptation of them displayed the secret of his success.

Few members of the profession, removed as he was from the centre of medical influence, untouched by the constant stimulation which contact and intercourse develops, retained and cultivated the latest and best which science always offers, thereby keeping himself fully abreast with the times. Apart from his many successful operations as a general surgeon mention should be made of his skill as an operator for cataract, in which he took great interest and in which his laudable ambition found rich reward.

Dr. Barnett was an indefatigable worker; he loved his work; no task however irksome, however exacting or laborious, was too great for his endeavor. Personal care or social endearments or attractions never lured him from his task. After a hard day's work it was no unusual undertaking for him to drive ten or twenty miles and return to visit a distant patient in the night.

The obligations existing between himself and his patients he justly recognized as mutual. He expected the just reward for his labors, and held his patrons to their obligations. He was sympathetic and tender. The poor knew in him their friend. The spirit of the Divine Master found its appropriate expression in his active silent works of charity. His attitude toward the members of the medical profession I need not recount. He was cautious, generous, kindly, helpful. He expected no more—I might say less—than he gave.

Dr. Barnett was for many years a member of the Greene County Medical Society, holding every office in its gift. He was one of the reorganizers of that Society in 1855, secretary in 1856, secretary and treasurer 1857, delegate to the State Medical Society in 1857, in 1863 and 1864 president and he served several years as censor. He became a permanent member of the State Medical Society in 1863, and contributed to its papers a case on "Rupture of the Uterus," also one on "Arsenic Poisoning."

How many of us who count or counted ourselves among the younger members of the profession have been aided by his counsel and cheered by his encouragement? In this brief and fragmentary history of his life and imperfect analysis of some traits of his character there is a lesson which should make the strong stronger and encourage the weak.

It was the happy fortune of the writer to know Dr. Barnett intimately. My earliest recollections of him were his visits to my father's house as our physician. In my early professional life I

had the honor of being associated with him in business in Windham. Though the period of our partnership was short, owing to his unexpected removal to Coxsackie, it was one of the brightest spots in my life. Closer and more delightful friendship I never experienced. With opportunities for a more intimate acquaintance with the inner life of our departed brother that few, if any, ever enjoyed, it is my deliberate judgment that he possessed qualities of mind and heart which we may hold in high esteem, and virtue which we may with profit imitate.

In this circle of friends, this Society, my intercourse with which I remember with so much of pleasure and satisfaction, this personal tribute to my friend will, I am sure, find a ready response in every heart.

III. Obituary Sketch of Dr. William Butler,

MAINE, N. Y.

By DWIGHT DUDLEY, M.D.,

MAINE.

[Presented to the Medical Society of the County of Broome, and by vote communicated to the State Society.]

Dr. William Butler was born in the town of Landeborough, Hillsboro County, N. H., April 22, 1805, and died at Maine, N. Y., December 19, 1891, being thus nearly eighty-seven years of age. He was the son of Jonathan and Lois Kidder Butler, and the youngest of twelve children. His father was a soldier in the Revolutionary war, and fought at the battle of Bunker Hill. Dr. Butler took a course of classics in Greenfield Academy, New Hampshire, after which a full medical course, graduating at Dartmouth College, taking his degree of M.D. in 1830. The same year, when twenty-four years of age, he came to Broome County and located a half-mile below Maine Village, but subsequently moved into the village, where he has since resided.

On the 30th of March, 1830, he married Miss Nancy Smith, who bore him four children, all of whom are dead save Dr. William M. Butler, of Brooklyn, N. Y. Another son enlisted in the U. S. army during the Mexican war, and died in Pueblo, Mexico. His

first wife died in 1850, and soon after he married his second wife, who survives him.

Dr. Butler began practice in Maine when the country was new, and covered, for the most part, with dense forests. He continued the practice for more than sixty years over a wide extent of territory, riding for many years on horseback, his medicine case being the old time-honored saddle bags.

Dr. Butler joined the Broome County Medical Society in May, 1831, and when he died he had been for many years the oldest member living. He was for many years an active member of the Society, but of late, owing to his advanced age, he has not attended many of its meetings. The last time he attended the writer remembers that Dr. George Burr was living and requested Dr. Butler to stand up with him, by his side, while he briefly spoke of the early history of the Society. Dr. Burr stated that Dr. Butler and himself were the oldest members of the Society living. Dr. Butler was then considerably Dr. Burr's senior, and long out-lived all of his early associates, some of whom were the incorporators of the Broome County Medical Society.

Dr. Butler was a prominent and active member of the Congregational Church of Maine for more than forty years. He possessed in an eminent degree those moral qualities that constitute the good physician, namely, truth, honesty, fidelity, and purity. He did not practice medicine simply to make money or get a living. He regarded his profession as a calling of God, to save human life and to relieve human suffering. To this end he devoted himself body and soul. No danger deterred him, no hardship moved him from the conscientious discharge of his duties.

He ministered to the poor without hope of gain with the same attention and fidelity as to the rich. The milk of human kindness was in him rich with the cream of sympathy, which enabled him, like his great Master, to bear the sufferings and sorrows of others as his own. His old age was beautiful for the halo of Christian cheerfulness and for the modest simplicity of his demeanor.

Although the infirmities of advanced age compelled him to desist from the general practice of his profession, he continued to answer the calls of his aged friends who lived near by ; and, faithful to his calling to the last, it was while ministering at the dying bed of an octogenarian like himself that he was seized of the fatal "grippe" that bore him from the scenes of his earthly labors to the bosom of his God.

IV. Biographical Sketch of Josiah Hasbrouck, M.D.,

PORT EWEN, N. Y.

The subject of this sketch was one of the oldest practitioners of medicine of Ulster County, and for many years an active member of this Society.

He was of French descent, and was born at the family homestead "Colabarre," in the town of Marbletown, on the 1st of January, 1830. He was the son of Jacob D. Hasbrouck; his mother's maiden name was Ann Oliver.

He was educated at Napanock Academy and at Mount Pleasant Academy, Sing Sing. His medical education was received from the Albany Medical College, whence he graduated in 1850.

In 1856 he married Ellen Jane Blauvelt, daughter of Gilbert D. Blauvelt, of Orangeburgh, Rockland County. The same year he entered upon the practice of medicine at Stone Ridge, and twelve months later he removed to Port Ewen, where he spent the remainder of his life in the active pursuit of his profession, and in which he secured a prominent position. He was a member of the Ulster County Medical Society, and in 1875 was its president. The same year he was made a permanent member of the State Society, having previously served in the capacity of a delegate to it.

He took an interest in and found time for public work outside of his profession. For many years he was a director of the State Bank at Kingston, and was a commissioner to loan moneys of the State for a period of eight years. He was always active in political work, and as a staunch Republican did official service, representing the town of Esopus in the Board of Supervisors for several terms, serving as Coroner for the county, and on several occasions representing his party in County and State Conventions.

He was a man of generous impulses and a liberal giver. He won hosts of warm, devoted friends.

Four sons were born to him, the Hon. G. B. Hasbrouck, of Rondout, Dr. W. D. Hasbrouck, of Rondout, Dr. John Mabie Hasbrouck, of Haverstraw, and Dr. Josiah Hasbrouck, Jr., of Port Ewen. He died at Port Ewen, the scene of his professional life and work, March 25, 1889.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

OFFICERS OF THE SOCIETY FROM ITS ORGANIZATION TO THE PRESENT TIME.

Year.	*President.*	*Vice-President.*	*Secretary.*	*Treasurer.*
1807	Wm. McClelland,	Alexander Shelden,	John Stearns,	Moses Willard.
1808	Nicholas Romayne,	Alexander Shelden,	John Stearns,	James G. Graham.
1809	Nicholas Romayne,	Alexander Shelden,	John Stearns,	Andrew Proudfit.
1810	Nicholas Romayne,	Alexander Shelden,	John Stearns,	Andrew Proudfit.
1811	William Wilson,	Westel Willoughby,	Benj. R. Bevier,	Asa B. Sizer.
1812	John R. B. Rodgers,	Westel Willoughby,	John Stearns,	Asa B. Sizer.
1813	John R. B. Rodgers,	Joseph White,	John Stearns,	Jas. L. Van Kleeck.
1814	John R. B. Rodgers,	Joseph White,	Ely Burritt,	Jas. L. Van Kleeck.
1815	Joseph White,	Ely Burritt,	James Low,	Westel Willoughby.
1816	Joseph White,	Ely Burritt,	James Low,	John Stearns.
1817	John Stearns,	Henry Mitchell,	James Low,	Chas. D. Townsend.
1818	John Stearns,	Henry Mitchell,	Peter Wendell,	Chas. D. Townsend.
1819	John Stearns,	Westel Willoughby,	Chas. D.Townsend,	John Downs.
1820	John Stearns,	Westel Willoughby,	Chas. D.Townsend,	John Downs.
1821	Samuel L. Mitchell,	Peter C. Adams,	Chas. D.Townsend,	John Downs.
1822	Samuel L. Mitchell,	Thomas Fuller,	Chas. D.Townsend,	T. Romeyn Beck.
1823	Alex. Coventry,	John H. Steele,	Chas. D.Townsend,	Jonathan Eights.
1824	Alex. Coventry,	John H. Steele,	Chas. D.Townsend,	Jonathan Eights.
1825	James R. Manley,	T. Romeyn Beck,	Platt Williams,	Jonathan Eights.
1826	James R. Manley,	T. Romeyn Beck,	Platt Williams,	Jonathan Eights.
1827	T. Romeyn Beck,	Laurens Hull,	Platt Williams,	Jonathan Eights.
1828	T. Romeyn Beck,	Laurens Hull,	Platt Williams,	Jonathan Eights.
1829	T. Romeyn Beck,	Henry Mitchell,	Joel A. Wing,	Jonathan Eights.
1830	Jonathan Eights,	Henry Mitchell,	Joel A. Wing,	Platt Williams.
1831	Jonathan Eights,	Thomas Spencer,	Joel A. Wing,	Platt Williams.
1832	Thomas Spencer,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1833	Thomas Spencer,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1834	John H. Steele,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1835	John H. Steele,	Jas. McNaughton,	Joel A. Wing,	Platt Williams.
1836	Jas. McNaughton,	Samuel White,	Joel A. Wing,	Platt Williams.
1837	Jas. McNaughton,	Samuel White,	Peter Van O'Linda,	Platt Williams.
1838	Laurens Hull,	Sumner Ely,	Peter Van O'Linda,	Platt Williams.
1839	Laurens Hull,	Sumner Ely,	Peter Van O'Linda,	Platt Williams.
1840	Sumner Ely,	John B. Beck,	Peter Van O'Linda,	Platt Williams.
1841	John B. Beck,	William Taylor,	Peter Van O'Linda,	Platt Williams.
1842	William Taylor,	Joel A. Wing,	Peter Van O'Linda,	Platt Williams.
1843	Samuel White,	Joel A. Wing,	Peter Van O'Linda,	Platt Williams.
1844	Joel A. Wing,	Harman Van Dusen,	Peter Van O'Linda,	Platt Williams.
1845	James Webster,	Robert G. Frary,	Peter Van Buren,	Peter Van O'Linda

Year.	*President.*	*Vice-President.*	*Secretary.*	*Treasurer.*
1846	John McCall,	Stephen Hasbrouck,	Peter Van Buren,	Peter Van O'Linda.
1847	Thos. W. Blatchford,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1848	Alex. H. Stephens,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1849	Alex. H. Stephens,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1850	Alex. Thompson,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1851	Robert G. Frary,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1852	Alonzo Clark,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1853	Jenks S. Sprague,	Peter Van Buren,	James H. Armsby,	Peter Van O'Linda.
1854	Chas. R. Coventry,	Peter Van Buren,	Howard Townsend,	Peter Van O'Linda.
1855	Fr'k H. Hamilton,	Thomas Hun,	Howard Townsend,	Peter Van O'Linda.
1856	Alden March,	Chas. S. Goodrich,	Howard Townsend,	J.V.P.Quackenbush.
1857	Augustus Willard,	Thos. C. Brinsmade,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1858	T. C. Brinsmade,	Geo. W. Bradford,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1859	B. Fordyce Barker,	Daniel T. Jones,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1860	Daniel T. Jones,	Edward H. Parker,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1861	Edward H. Parker,	Andrew Van Dyck,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1862	Thomas Hun,	Daniel P. Bissell,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1863	Daniel P. Bissell,	Joel Foster,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1864	Frederick Hyde,	George J. Fisher,	Sylvest. D. Willard,	J.V.P.Quackenbush.
1865	Henry W. Dean,	Jos. C. Hutchison,	Wm. H. Bailey,	J.V.P.Quackenbush.
1866	Jos. C. Hutchison,	Julien T. Williams,	Wm. H. Bailey,	J.V.P.Quackenbush.
1867	John P. Gray,	Lake I. Tefft,	Wm. H. Bailey,	J.V.P.Quackenbush.
1868	J.V.P.Quackenbush,	James P. White,	Wm. H. Bailey,	John V. Lansing.
1869	James P. White,	George Burr,	Wm. H. Bailey,	John V. Lansing.
1870	S. O. Vander Poel,	Gilson A. Dayton,	Wm. H. Bailey,	John V. Lansing.
1871	William C. Wey,	Andr'w F. Doolittle,	Wm. H. Bailey,	Charles H. Porter.
1872	Cornelius R. Agnew,	B. F. Sherman,	Wm. H. Bailey,	Charles H. Porter.
1873	Edward M. Moore,	Francis Burdick,	Wm. H. Bailey,	Charles H. Porter.
1874	George J. Fisher,	Harvey Jewett,	Wm. H. Bailey,	Charles H. Porter.
1875	Thos. F. Rochester,	Ellsworth Eliot,	Edward R. Hun,	Charles H. Porter.
1876	E. R. Squibb,	J. V. Kendall,	Edward R. Hun,	Charles H. Porter.
1877	J. Foster Jenkins,	A. L. Saunders,	W. Manlius Smith,	Charles H. Porter.
1878	D. B. St. John Roosa,	Judson C. Nelson,	W. Manlius Smith,	Charles H. Porter.
1879	Henry D. Didama,	Nath. C. Husted,	W. Manlius Smith,	Charles H. Porter.
1880	William H. Bailey,	Abraham Jacobi,	W. Manlius Smith,	Charles H. Porter.
1881	Abraham Jacobi,	William Govan,	W. Manlius Smith,	Charles H. Porter.
1882	Harvey Jewett,	E. D. Ferguson,	W. Manlius Smith,	Charles H. Porter.
1883	Alex. Hutchins,	H. G. P. Spencer,	W. Manlius Smith,	Charles H. Porter.
1884	B. F. Sherman,	P. R. H. Sawyer,	W. Manlius Smith,	Charles H. Porter.
1885	A. Vander Veer,	Alfred C. Post,	W. Manlius Smith,	Charles H. Porter.
1886	William S. Ely,	Sol. Van Etten,	W. Manlius Smith,	Charles H. Porter.
1887	Alfred L. Loomis,	A. M. Phelps,	W. Manlius Smith,	Charles H. Porter.
1888	Samuel B. Ward,	A. Walter Suiter,	W. Manlius Smith,	Charles H. Porter.
1889	Daniel Lewis,	Alfred Mercer,	Frederic C. Curtis,	Charles H. Porter.
1890	W. W. Potter,	L. S. Pilcher,	Frederic C. Curtis,	Charles H. Porter.
1891	A. Walter Suiter,	W. W. Crandall,	Frederic C. Curtis,	Charles H. Porter.
1892	Lewis S. Pilcher,	Henry L. Elsner,	Frederic C. Curtis,	Charles H. Porter.

OFFICERS, 1892.

PRESIDENT,
LEWIS S. PILCHER, Brooklyn.

VICE-PRESIDENT,
HENRY L. ELSNER, Syracuse.

SECRETARY,
FREDERIC C. CURTIS (17 Washington Ave.), Albany.

TREASURER,
CHARLES H. PORTER (103 Lancaster Street), Albany.

MEMBERS.

I. Delegates from County Medical Societies, etc.

(By-laws, Chap. I., Sec. 2.)

Figures in parentheses indicate when term expires.

Albany County (1894):
O. D. Ball, Albany,
Henry Hun, "
W. J. Nellis, "
T. Kirkland Perry, Albany.

Allegany County (1895):
G. H. Witter, Wellsville.

Broome County (1895):
Daniel S. Burr, Binghamton.

Cattaraugus County (1894):
George Lattin, Cattaraugus,
S. V. Pool, Otto.

Cayuga County (1894):
W. S. Cheeseman, Auburn,
J. M. Jenkins, Auburn.

Chautauqua County (1894):
Edward Ames, Sherman,
H. J. Dean, Brocton.

Chemung County (1894):
Hamilton D. Wey, Elmira.

Chenango County (1895):
G. O. Williams, Greene.

Clinton County (1895):
Frank Madden, Plattsburgh.

Columbia County (1895):
G. P. K. Pomeroy, Stuyvesant.

Cortland County (1895):
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Delaware County (1895):
H. A. Gates, Delhi.

Dutchess County (1894):
J. W. Poucher, Poughkeepsie,
Howell White, Fishkill.

Erie County (1895):
Edward Clark, Buffalo,
B. H. Daggett, "
Benjamin H. Grove, "
Herman E. Hayd, "
Ernest Wende, "

Essex County (1894):
Charles B. Warner, Port Henry.

Franklin County (1895):
C. E. Pearl, North Bangor.

Fulton County (1894):
John Edwards, Gloversville.

Genesee County (1895):
——

Greene County (1894):
Henry J. Griffin, Cairo.

Herkimer County (1895):
George Graves, Herkimer.

Jefferson County (1894):
George M. McCombs, Clayton,
C. M. Rexford, Watertown.
Kings County (1895):
Homer L. Bartlett, Flatbush,
Wm. Browning, Brooklyn,
G. R. Butler, "
H. B. Delatour, "
J. W. Hyde, "
J. L. Kortwright, "
J. A. McCorkle, "
J. C. MacEvitt, "
Geo. McNaughton, "
Ernest Palmer, "
W. H. B. Pratt, "
A. J. C. Skeene, "
Lewis County (1894):
W. W. Jamieson, New Bremen.
Livingston County (1893):
Clement C. Goodrich, Avon.
Madison County (1895):
C. B. Wilcox, Eastville.
Monroe County (1893):
W. J. Herriman, Rochester,
E. W. Mulligan, "
H. T. Williams, "
Montgomery County (1893):
C. F. Timmerman, Amsterdam.
New York County (1893):
Peter A. Callan, New York,
Frank B. Carpenter, "
Henry D. Chapin, "
William A. Dayton, "
John Dorning, "
George R. Elliott, "
D. H. Goodwillie, "
Egbert H. Grandin, "
Urban G. Hitchcock, "
George T. Jackson, "
William C. Jarvis, "
David D. Jennings, "
Samuel Lloyd, "
Malcolm McLean, "
Willy Meyer, "
Robert T. Morris, "
Albert S. Newcomb, "
Wm. P. Northrup, "
R. C. M. Page, New York,
Seneca D. Powell, "
Charles A. Powers, "
William Stevens, "
Robert B. Talbot, "
Francis Valk, "
Ralph Waldo, "
Niagara County (1894):
F. J. Baker, Lockport,
C. M. Palmer, "
Oneida County (1894):
Wilbur H. Booth, Utica,
William M. Gibson, "
Hamilton S. Quinn, "
Onondaga County (1893):
U. H. Brown, Syracuse,
J. W. Brown, "
John Van Duyn, "
Ontario County (1894):
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Orange County (1893):
Wm. L. Cuddeback, Port Jervis,
Wm. E. Douglas, Middletown.
Orleans County (1894):
George J. Lund, Medina.
Oswego County (1893):
E. F. Marsh, Fulton,
J. K. Stockwell, Oswego.
Otsego County (1894):
O. W. Peck, Oneonta,
Nathan Smith, Richmondville.
Putnam County (1894):
Austin LaMonte, Carmel.
Queens County (1894):
James S. Cooley, Glen Cove,
L. M. Lanehart, Hempstead.
Rensselaer County (1893):
John B. Harvie, Troy,
Clinton B. Herrick, Troy,
W. Wotkyns Seymour, Troy.
Richmond County (1894):
E. D. Coonley, Mariner's Harbor.
Rockland County (1894):
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St. Lawrence County (1895):
Andrew H. Allen, Gouverneur,
F. H. Brewer, Madrid,
W. S. Daly, Ogdensburgh.

Saratoga County (1894):

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Schenectady County (1894):
M. G. Planck, Schenectady.

Schoharie County (1894):
C. McCulloch, Central Bridge.

Schuyler County (1893):
S. B. Allen, Burdette.

Seneca County (1893):
A. J. Nellis, Jr., Willard.

Steuben County (1894):
T. O. Burlison, Bath,
R. F. Parkhill, Howard.

Suffolk County (1895):
Barton D. Skinner, Greenport.

Sullivan County (1894):
W. W. Appley, Cochecton.

Tioga County (1894):
J. M. Barrett, Owego.

Tompkins County (1894):
W. C. Gallagher, Slatersville.

Ulster County (1895):
Jacob Chambers, Kinston,
J. Hasbrouck, Port Ewen,
S. L. Dawes, Saugerties.

Warren County (1894):
W. R. Adamson, Lake George.

Washington County (1895):
F. G. Fielding, Hartford,
G. H. Whitcomb, Greenwich.

Wayne County (1895):
J. N. Arnold, Clyde,

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Westchester County (1895):
Stuart B. Carlisle, Mt. Vernon,
Charles Mason, Peekskill,
Henry Moffatt, Yonkers.

Wyoming County (1893):
Milan Baker, Buffalo.

Yates County (1893):
John M. Maloney, Dundee.

New York Academy of Medicine (1895):
Simon Baruch, New York,
F. H. Bosworth, New York,
Henry C. Coe, "
J. Henry Fruitnight, "
Francis P. Kinnicutt, "

Medical Faculty, New York City University (1895):

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Bellevue Hospital Medical College (1895):

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College of Physicians and Surgeons, New York (1893):

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Long Island College Hospital (1893):
J. H. Raymond, Brooklyn.

Medical Department, Union University (1894):
Samuel R. Morrow, Albany.

Medical Department, University of Buffalo (1894):
Matthew D. Mann, Buffalo.

College of Medicine, Syracuse University (1894):
F. W. Marlow, Syracuse.

Medical Department, Niagara University (1893):
Herman Mynter, Buffalo.

New York Post-Graduate Medical School (1893):
Robert Abbe, New York.

New York Polyclinic (1894):

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Rochester Pathological Society (1893):
Frank F. Dow, Rochester.

Medical Association of Northern New York (1895):
J. A. Grant, Malone.

Utica Medical Library Association (1893):
Earl D. Fuller, Utica.

Elmira Academy of Medicine (1894):
William H. Davis, Horseheads.

Utica Medical Club (1895):
Charles G. Ward, Utica.

II. Permanent Members.

For regulations with regard to permanent members, their election, initiation fees, annual dues, etc., see page 2 of *Transactions*. Permanent members who neglect to pay their dues for three years are dropped from the following list till arrearages are paid. (By-laws, Chapter VI., Section 5.)

Permanent members, of the age of sixty or upward, who have been permanent members ten years, on making application to the Secretary, the application being accompanied with the Treasurer's certificate that all dues have been paid up to that date, are placed on the list of *Retired Permanent Members*, and are relieved from further payment of annual dues. (Chapter I., Section 4, of By-laws.) The names of Retired Permanent Members are printed in the following list in *italics*, with year of retirement.

Year of Election.			County.
1880	H. R. Ainsworth,	Addison,	Steuben
1887	C. S. Allen,	Greenbush,	Rensselaer
1885	Eli Allison,	Wayne,	Steuben
1892	Edward B. Angell,	Rochester,	Monroe
1888	C. W. Arthur,	Lyon Mountain,	Clinton
1888	Moses T. Babcock,	Hammondsport,	Steuben
1888	Gorham Bacon,	New York,	New York
1858	*Charles G. Bacon* (1884),	Fulton,	Oswego
1857	*M. M. Bagg* (1883),	Utica,	Oneida
1891	F. D. Bailey,	Brooklyn,	Kings
1889	William C. Bailey	Albion,	Orleans
1864	William H. Bailey,	Albany,	Albany
1884	M. J. Baker,	Hornellsville,	Steuben
1891	Lewis Balch	Albany,	Albany
1859	*John Ball* (1883),	Brooklyn,	Kings
1878	*N. H. Ballou* (1887),	Lansingburgh,	Rensselaer
1889	L. Bolton Bangs,	New York,	New York
1867	*Lyman Barton* (1883),	Willsborough,	Essex
1891	Bernard Bartow,	Buffalo,	Erie
1884	Milford L. Bates,	Canaan Four Corners,	Columbia
1876	Eugene Beach,	Gloversville,	Fulton
1866	*A. N. Bell* (1881),	Brooklyn,	Kings
1887	Herman Bendell,	Albany,	Albany
1890	Albert C. Benedict,	Yonkers,	Westchester
1889	George E. Benson,	Hudson,	Columbia
1885	John M. Bigelow,	Albany.	Albany
1862	John Boardman,	Buffalo,	Erie
1861	Reed B. Bontecou,	Troy,	Rensselaer
1892	Wilbur H. Booth,	Utica,	Oneida
1891	F. H. Bosworth,	New York,	New York
1891	Louis Boudrias,	Cohoes,	Albany
1888	C. W. Bourne,	Hamburgh,	Erie
1892	Israel C. Bourne,	Masonville,	Delaware
1888	J. P. Boyd,	Albany,	Albany
1872	Nathan Bozeman,	New York,	New York
1874	Elisha H. Bridges,	Ogdensburgh,	St. Lawrence
1890	A. N. Brockway,	New York,	New York
1883	A. J. Browne,	Newport,	Herkimer
1890	Charles E. Bruce,	New York,	New York
1888	E. F. Brush,	Mt. Vernon,	Westchester

Year of Election.			County.
1868	*Israel I. Buckbee* (1882),	Fonda,	Montgomery
1887	L. Duncan Bulkley,	New York,	New York
1884	John E. Burdick,	Johnstown,	Fulton
1876	J. H. Hobart Burge,	Brooklyn,	Kings
1889	Stephen Smith Burt,	New York,	New York
1875	M. H. Burton,	Troy,	Rensselaer
1892	Peter A. Callan,	New York.	New York
1885	A. M. Campbell,	Mt. Vernon,	Westchester
1892	Frank B. Carpenter,	New York,	New York
1884	H. W. Carpenter,	Oneida,	Madison
1884	S. S. Cartwright,	Roxbury,	Delaware
1890	Charles Cary,	Buffalo,	Erie
1866	*J. E. Casey* (1890),	Mohawk,	Herkimer
1881	Frederick A. Castle,	New York,	New York
1879	Walter B. Chase,	Brooklyn,	Kings
1889	E. D. Chipman,	Saugerties,	Ulster
1886	Charles H. Chubb,	Palenville,	Greene
1868	*Alonzo Churchill* (1884),	Utica,	Oneida
1889	John H. Cipperly,	Troy,	Rensselaer
1890	S. W. Close,	Gouverneur,	St. Lawrence
1854	*Thomas F. Cock* (1881),	New York,	New York
1891	Philander Collard,	Sing Sing,	Westchester
1867	*Darwin Colvin* (1884),	Clyde,	Wayne
1890	William J. Conklin,	Fishkill,	Dutchess
1888	D. H. Cook,	Albany,	Albany
1888	J. Leonard Corning,	New York,	New York
1891	Charles N. Cox,	New York,	New York
1890	Herman Craft,	Stone Ridge,	Ulster
1867	*H. S. Crandall* (1883),	Leonardsville,	Madison
1881	W. W. Crandall,	Wellsville,	Allegany
1890	Floyd S. Crego,	Buffalo,	Erie
1882	Joseph P. Creveling,	Auburn,	Cayuga
1891	Charles W. Crispell,	Rondout,	Ulster
1891	Alexander H. Crosby,	Lowville,	Lewis
1890	Lemuel Cross,	Schoharie,	Schoharie
1890	C. M. Culver,	Albany,	Albany
1889	Andrew F. Currier,	New York,	New York
1891	James H. Curry,	Shrub Oak,	Westchester
1882	F. C. Curtis,	Albany,	Albany
1885	John G. Curtis,	New York,	New York
1891	Charles L. Dana,	New York,	New York
1890	Archibald Dann,	Rochester,	Monroe
1889	Thomas S. Dawes,	Saugerties,	Ulster
1891	Henry H. Deane,	Watertown,	Jefferson
1889	Francis Delafield,	New York,	New York
1888	Charles A. Dewey,	Rochester,	Monroe
1892	Charles E. Douglass,	Lowville,	Lewis

Year of Election.			County.
1890	O. B. Douglas,	New York,	New York
1878	H. G. Dubois,	Camden,	Oneida
1886	Joseph W. Eddy,	Oswego,	Oswego
1885	I. C. Edson,	Windsor,	Broome
1870	*Ellsworth Eliot* (1887),	New York,	New York
1892	Henry L. Elsner,	Syracuse,	Onondaga
1881	Smith Ely,	Newburgh,	Orange
1875	William S. Ely,	Rochester,	Monroe
1892	Z. Tayler Emery,	Brooklyn,	Kings
1871	Thomas Addis Emmet,	New York,	New York
1891	George A. Evans,	Brooklyn,	Kings
1871	*Nelson Fanning* (1882),	Catskill,	Greene
1889	Jas. D. Featherstonhaugh,	Cohoes,	Albany
1892	Mahlon Felter,	Troy,	Rensselaer
1890	E. D. Fisher,	New York,	New York
1891	S. Z. Fisher,	Little Valley,	Cattaraugus
1888	Henry Flood,	Elmira,	Chemung
1889	M. B. Folwell,	Buffalo,	Erie
1888	Willis E. Ford,	Utica,	Oneida
1890	Benjamin A. Fordyce	Union Springs,	Cayuga
1886	Amos Fowler,	Albany,	Albany
1889	George R. Fowler,	Brooklyn,	Kings
1882	George H. Fox,	New York,	New York
1889	N. H. Freeland,	Tarrytown,	Westchester
1862	*Samuel H. Freeman* (1886),	Albany,	Albany
1891	Crawford E. Fritts,	Hudson,	Columbia
1886	Robert M. Fuller,	New York,	New York
1880	P. R. Furbeck,	Gloversville,	Fulton
1892	W. C. Gallagher,	Slaterville Springs,	Tompkins
1886	William H. Gedney,	Milton,	Ulster
1887	Arpad G. Gerster,	New York,	New York
1884	V. P. Gibney,	New York,	New York
1886	Theron Z. Gibbs,	Fort Ann,	Washington
1889	J. H. Glass,	Utica,	Oneida
1891	D. A. Gleason,	Oxford,	Chenango
1883	I. N. Goff,	Cazenovia,	Madison
1892	D. H. Goodwillie,	New York,	New York
1858	*William Govan* (1891),	Stony Point,	Rockland
1881	Henry Gray,	Greenwich,	Washington
1887	Tobias J. Green,	Mexico,	Oswego
1888	Alexander Hadden,	New York,	New York
1887	William Hailes,	Albany,	Albany
1890	Charles W. Hamlin,	Middleville,	Herkimer
1889	Graeme M. Hammond,	New York,	New York
1877	*T. Hammond* (1889),	Dover Plains,	Dutchess
1889	H. T. Hanks,	New York,	New York
1892	John B. Harvie,	Troy,	Rensselaer
1892	Cornelius V. Hasbrouck,	Rosendale,	Ulster

Year of Election.			County.
1880	C. R. Heaton,	Oswego,	Tioga
1889	John L. Heifron,	Syracuse,	Onondaga
1890	Neil J. Hepburn,	New York,	New York
1889	E. M. Hermance,	Yonkers,	Westchester
1892	C. B. Herrick,	Troy,	Rensselaer
1890	Amanda S. Hickey,	Auburn,	Cayuga
1889	F. Whitehill Hinkel,	Buffalo,	Erie
1892	Urban G. Hitchcock,	New York,	New York
1886	Benjamin L. Holt,	Penn Yan,	Yates
1885	George G. Hopkins,	Brooklyn,	Kings
1885	H. R. Hopkins,	Buffalo,	Erie
1874	*B. L. Hovey* (1885),	Rochester,	Erie
1891	Eugene H. Howard,	Rochester,	Monroe
1892	W. R. Howard,	Rochester,	Monroe
1886	Lucien Howe,	Buffalo,	Erie
1891	John T. Howell,	Newburgh,	Orange
1868	*Samuel T. Hubbard* (1885),	New York,	New York
1854	Thomas Hun,	Albany,	Albany
1892	Joseph H. Hunt,	Brooklyn,	Kings
1889	Alexander S. Hunter,	New York,	New York
1878	James C. Hutchison,	Troy,	Rensselaer
1875	Abraham Jacobi,	New York,	New York
1892	Nathan Jacobson,	Syracuse,	Onondaga
1886	Charles Jewett,	Brooklyn,	Kings
1883	Laurence Johnson,	New York,	New York
1882	Wm. H. Johnston,	Port Leyden,	Lewis
1890	Herbert G. Jones,	Utica,	Oneida
1890	D. S. Kellogg.	Plattsburgh,	Clinton
1856	James V. Kendall,	Baldwinsville,	Onondaga
1891	Osman F. Kinloch,	Troy,	Rensselaer
1884	M. S. Kittenger,	Lockport,	Niagara
1880	Herman Knapp,	New York,	New York
1857	*Jonathan Kneeland* (1881),	South Onondaga,	Onondaga
1887	W. S. Layman,	Schoharie,	Schoharie
1878	James R. Leaming,	New York,	New York
1890	Dwight M. Lee,	Oxford,	Chenango
1890	C. M. Lefler,	Gloversville,	Fulton
1875	Joseph Lewi,	Albany,	Albany
1890	Maurice J. Lewi,	Albany,	Albany
1884	Daniel Lewis,	New York,	New York
1892	Samuel Lloyd,	New York,	New York
1884	A. V. B. Lockrow,	New York,	New York
1885	J. D. Lomax,	Troy,	Rensselaer
1878	A. J. Long,	Greenwich,	Washington
1892	Eli H. Long,	Buffalo	Erie
1886	Alfred L. Loomis,	New York,	New York
1891	Henry P. Loomis,	New York,	New York

Year of Election.			County.
1882	E. H. Loughran,	Kingston,	Ulster
1871	R. Loughran,	Kingston,	Ulster
1871	Frank S. Low,	Pulaski,	Oswego
1891	Carlos F. MacDonald,	New York,	New York
1888	James Macfie,	Fort Covington,	Franklin
1890	William Maddren,	Brooklyn,	Kings
1892	John M. Malony,	Dundee,	Yates
1891	Frank W. Marlow,	Syracuse,	Onondaga
1888	F. E. Martindale,	Port Richmond,	Richmond
1889	A. Ross Matheson,	Brooklyn,	Kings
1879	Arthur Mathewson,	Brooklyn,	Kings
1892	Charles P. McCabe,	Greenville,	Greene
1890	William P. McLaury,	Catskill,	Greene
1872	Leroy McLean,	Troy,	Rensselaer
1890	M. L. Mallory,	Rochester,	Monroe
1884	Alfred Mercer,	Syracuse,	Onondaga
1888	C. S. Merrill,	Albany,	Albany
1892	Willy Meyer,	New York,	New York
1888	Lewis H. Miller,	Brewster,	Putnam
1892	Theodore D. Mills,	Middletown,	Orange
1886	W. F. Mittendorf,	New York,	New York
1891	Joseph Moffatt,	Washingtonville,	Orange
1889	W. Oliver Moore,	New York,	New York
1892	Robert T. Morris,	New York,	New York,
1892	Herman Mynter,	Buffalo,	Erie
1892	Albert S. Newcomb,	New York,	New York
1892	T. B. Nichols,	Plattsburgh,	Clinton
1861	*Nelson Nivison*, (1881),	Burdette,	Schuyler
1870	Henry D. Noyes,	New York,	New York
1880	D. V. O'Leary,	Albany,	Albany
1890	George H. Oliver,	Dickinson Centre,	Franklin
1891	Darius S. Orton,	Northampton,	Fulton
1888	Fesenden N. Otis,	New York,	New York
1892	Andrew Otterson,	Brooklyn,	Kings
1890	May R. Owen,	Brooklyn,	Kings
1892	R. C. M. Page,	New York,	New York
1891	Henry C. Palmer,	Utica,	Oneida
1892	Roswell Park,	Buffalo,	Erie
1858	Edward H. Parker,	Poughkeepsie,	Dutchess
1863	*W. H. H. Parkhurst* (1883),	Frankfort,	Herkimer
1873	*John Parr* (1886),	Buel,	Montgomery
1887	Edward L. Partridge,	New York,	New York
1890	William L. Pearson,	Schenectady,	Schenectady
1881	*S. H. Peck* (1892),	Ithaca,	Tompkins
1891	Wendell C. Phillips,	New York,	New York
1890	Henry T. Peirce,	New York,	New York
1889	F. M. Perine,	Dansville,	Livingston

Year of Election.			County
1892	Albert E. Persons,	Buffalo,	Erie
1881	*John C. Peters* (1884),	New York.	New York
1883	A. M. Phelps,	New York,	New York
1880	Henry G. Piffard,	New York,	New York
1891	Lewis S. Pilcher,	Brooklyn,	Kings
1889	Burke Pillsbury,	Middletown,	Orange
1880	J. O. Polhemus,	Nyack,	Rockland
1886	Oren D. Pomeroy,	New York,	New York
1881	Thomas R. Pooley,	New York,	New York
1869	Charles H. Porter,	Albany,	Albany
1891	J. Densmore Potter,	Delphi,	Onondaga
1883	W. W. Potter,	Buffalo,	Erie
1892	Seneca D. Powell,	New York,	New York
1891	H. DeV. Pratt, Jr.,	Elmira,	Chemung
1879	Jonathan S. Prout,	Brooklyn,	Kings
1877	A. E. M. Purdy,	New York.	New York
1889	Clarence C. Rice,	New York,	New York
1872	Charles E. Rider,	Rochester,	Monroe
1892	Wheelock Rider,	Rochester,	Monroe
1891	Frank W. Ring,	New York,	New York
1882	J. O. Roe,	Rochester,	Monroe
1878	D. B. St. John Roosa,	New York,	New York
1891	Henry Root,	Whitehall,	Washington
1887	Zotique Rousseau,	Troy,	Rensselaer
1891	Thomas E. Satterthwaite,	New York,	New York
1886	Lewis A. Sayre,	New York,	New York
1885	George Seymour,	Utica,	Oneida
1860	William P. Seymour,	Troy,	Rensselaer
1871	B. F. Sherman,	Ogdensburgh,	St. Lawrence
1884	Samuel Sherwell,	Brooklyn,	Kings
1870	George F. Shrady,	New York,	New York
1888	A. R. Simmons,	Utica,	Oneida
1878	George C. Smith,	Rondout,	Ulster
1867	*Wm. Manlius Smith* (1889),	Syracuse,	Onondaga
1873	*H. G. P. Spencer* (1891),	Watertown,	Jefferson
1886	James D. Spencer,	Watertown,	Jefferson
1884	C. S. Starr,	Rochester,	Monroe
1890	B. U. Steenberg,	Albany,	Albany
1892	William Stevens,	New York,	New York
1879	C. L. Stiles,	Owego,	Tioga
1880	E. V. Stoddard,	Rochester,	Monroe
1889	Charles Stover,	Amsterdam,	Montgomery
1888	W. H. Stuart,	Norwich,	Chenango
1882	Frederic R. Sturgis,	New York,	New York
1885	A. Walter Suiter,	Herkimer,	Herkimer
1892	Peter L. Suits,	Tribe's Hill,	Montgomery
1869	*William T. Swart* (1881),	Canandaigua,	Ontario

Year of Election.			County.
1865	*Isaac E. Taylor* (1883),	New York,	New York
1877	William Taylor,	Canastota,	Madison
1886	Robert Thomson,	Troy,	Rensselaer
1888	D. M. Totman,	Syracuse,	Onondaga
1891	Louis A. Tourtellot,	Utica,	Oneida
1886	Richard D. Traver,	Troy,	Rensselaer
1889	Willis G. Tucker,	Albany,	Albany
1880	R. K. Tuthill,	Poughkeepsie,	Dutchess
1892	Francis Valk,	New York,	New York
1889	S. O. Vander Poel,	New York,	New York
1876	Albert Vander Veer,	Albany,	Albany
1876	Solomon Van Etten,	Port Jervis,	Orange
1886	Eugene Van Slyke,	Albany,	Albany
1892	J. S. Van Vechten,	Chateaugay,	Franklin
1890	W. A. Vincent,	Three Mile Bay,	Jefferson
1892	Ralph Waldo,	New York,	New York
1886	Theodore C. Wallace,	Cambridge,	Washington
1873	R. H. Ward,	Troy,	Rensselaer
1883	Samuel B. Ward,	Albany,	Albany
1885	John S. Warren,	New York,	New York
1883	David Webster,	New York,	New York
1888	Louis A. Weigel,	Rochester,	Monroe
1891	Frank E. West,	Brooklyn,	Kings
1869	William C. Wey,	Elmira,	Chemung
1846	*John H. Wheeler* (1883),	Athens,	Greene
1889	John T. Wheeler,	Chatham,	Columbia
1883	J. W. Whitbeck,	Rochester,	Monroe
1879	*William T. White* (1889),	New York,	New York
1887	Jarvis S. Wight,	Brooklyn,	Kings
1892	Robert J. Wilding,	Malone,	Franklin
1883	C. E. Willard,	Catskill,	Greene
1865	*Julien T. Williams* (1880),	Dunkirk,	Chautauqua
1886	Thomas Wilson,	Claverack,	Columbia
1889	Gustavus S. Winston,	New York,	New York
1881	C. E. Witbeck,	Cohoes,	Albany
1883	L. D. Witherill,	Union,	Broome
1892	G. H. Witter,	Wellsville,	Allegany
1889	R. A. Witthaus,	New York,	New York
1887	W. Gill Wylie,	New York,	New York

Deceased (see "In Memoriam" page): C. V. Barnett, Coxsackie, Nov. 11, 1891, æt. 73; Thompson Burton, Fultonville, May 5, 1892, æt. 80; Charles E. De La Vergne, Brooklyn, June 4, 1892, æt. 34; Robert Frazier, Camden, May 10, 1891, æt. 74; Frederick S. Greene, Coxsackie, Sept. 30, 1891, æt. 71; N. C. Husted, Tarrytown, Nov. 19, 1891, æt. 66; Daniel Pardee, Fulton, Aug. 25, 1891, æt. 57; Frank H. Potter, Buffalo, July 16, 1891, æt. 31; Samuel Avery, Phœnix, Sept. 20, 1891, æt. 80; P. V. S. Pruyn,

Kinderhook, May 2, 1891, æt. 51; Paul H. Kretz-schmar, Brooklyn, April 27, 1891, æt. 44; George P. Salmon, Hudson, April 14, 1891, æt. 60; G. L. Halsey, Unadilla, Feb. 17, 1891, æt. 72; George N. Burwell, Buffalo, May 15, 1891, æt. 71; L. J. Ames, Mt. Morris, May, 1891, æt. 76; Simeon T. Clark, Lockport, Dec. 24, 1891, æt. 55.

III. Non-resident Members.

(Chapter I., Sec. 4, last paragraph, of the By-laws.)

Year of Election	
1884	J. Q. Adams, Pasadena, Cal.
1864	E. M. Alba, St. Augustine, Fla.
1891	Orville C. Baker, Brandon, Vt.
1862	Joseph Beattie, Richmond, Va.
1862	H. A. Carrington, New Haven, Connecticut
1874	A. T. Douglas, New London, Connecticut
1882	Lucius E. Felton, Hanford, Cal.
1857	Sanford B. Hunt, Newark, N. J.
1860	J. H. Jerome, Saginaw City, Michigan
1864	Charles McMillan, Rome, Italy
1861	John McNulty, Knoxville, Tennessee
1855	G. C. Monell, Omaha, Neb.
1887	J. C. Morse, Sabula, Iowa
1869	Jas. B. Murdoch, Pittsburg, Pa.
1875	J. H. Pooley, Columbus, Ohio
1859	*Henry N. Porter*, Washington, D. C.
1872	Arthur S. Wolff, Brownsville, Texas

IV. Honorary Members.

Year of Election.	
1889	Francis Bacon, New Haven, Connecticut
1888	B. F. Baer, Philadelphia, Pa.
1882	R. Bartholow, Philadelphia, Pa.
1880	J. S. Billings, U. S. Army
1862	H. Bronson, New Haven, Conn.
1880	J. B. Brown, U. S. Army
1877	W. A. F. Brown, Dumfries, Scotland
1886	E. N. Brush, Philadelphia, Pa.
1867	C. E. Brown-Séquard, London, England
1884	W. G. Brownson, New Canaan, Connecticut
1881	J. C. Bucknill, London, Eng.
1877	S. C. Busey, Washington, D. C.
1855	H. A. Buttolph, Short Hills, New Jersey
1885	T. S. Clouston, Edinburgh, Scotland
1875	J. M. DaCosta, Philadelphia, Pa.
1866	N. S. Davis, Chicago, Ill.
1892	W. E. B. Davis, Rome, Ga.
1875	F. Dichiara, Palermo, Italy
1863	P. W. Ellsworth, Hartford, Connecticut
1890	G. J. Engelmann, St. Louis, Missouri
1888	G. E. Fenwick, Montreal, Can.
1861	W. Frazer, Montreal, Can.
1883	Wm. Goodell, Philadelphia, Pennsylvania
1887	J. A. S. Grant, Cairo, Egypt.
1875	E. H. Gregory, St. Louis, Mo.
1887	A. P. Grinnell, Burlington, Vt.
1886	T. Hansen, Copenhagen, Denmark
1889	Reginald Harrison, Liverpool, England
1860	E. Hart, London, England
1879	C. Heath, London, England
1882	C. N. Hewitt, Red Wing, Minn.
1891	W. H. Hingston, Montreal, Canada
1877	W. S. Hopkins, Vergennes, Vt.
1854	O. P. Hubbard, Hanover, N. H.

Year of Election.

1875 E. M. Hunt, Metuchen, N. J.
1857 H. J. Hunter, Sheffield, Eng.
1891 J. Nevins Hyde, Chicago, Ill.
1870 Ralph Isham, Chicago, Ill.
1863 T. Jennings, Nashville, Tenn.
1861 P. A. Jewett, New Haven, Conn.
1887 E. Landolt, Paris, France
1870 H. M. Knight, Lakeville, Conn.
1873 H. C. Lombard, Geneva, Switzerland
1871 W. McCollum, Brooklyn, N. Y.
1892 Lewis S. McMurtry, Louisville, Kentucky
1872 R. McNamara, Dublin, Ireland
1889 Howard Marsh, London, Eng.
1879 L. A. Mercier, Paris, France
1877 S. Weir Mitchell, Philadelphia, Pennsylvania
1891 E. E. Montgomery, Phila., Pa.
1889 Wm. Pepper, Philadelphia, Pa.
1840 Placido Portal, Palermo, Italy
1891 Joseph Price, Philadelphia, Pa.
1852 Samuel S. Purple, New York
1892 Chas. A. L. Reed, Cincinnati, O.
1882 Sidney Ringer, London, Eng.
1875 Benjamin W. Richardson, London, Eng.

Year of Election.

1883 C. L. Robertson, London, Eng.
1892 Jas. F. W. Ross, Toronto, Can.
1889 Max Schede, Hamburg, Germany.
1888 F. J. Shepherd, Montreal, Can.
1866 Albert Smith, Peterboro, N. H.
1860 Alfred Stillé, Philadelphia, Pa.
1873 R. Stokes, Dublin, Ireland.
1871 D. H. Storer, Boston, Mass.
1886 L. Tait, Birmingham, Eng.
1891 W. H. Taylor, Cincinnati, O.
1870 W. H. Thayer, Brooklyn, N. Y.
1875 J. M. Toner, Washington, D.C.
1873 T. J. Turner, U. S. Navy
1872 R. Virchow, Berlin, Germany
1877 L. de Wecker, Paris, France
1874 T. S. Wells, London, Eng.
1885 J. T. Whittaker, Cincinnati, O.
1888 D. M. Wilcox, Farmington, Utah
1891 H. C. Wood, Philadelphia, Pa.
1862 A. Woodward, Franklin, Connecticut
1885 T. G. Wormley, Phila., Pa.
1871 W. Worthington, West Chester, Pa.
1892 A. H. Wright, Toronto, Can.

Deceased: Henry I. Bowditch, Boston, Jan. 14, 1892, æt. 84; Sir Morell Mackenzie, London, Eng., Feb. 3, 1892, æt. 55.

PERSONS ELIGIBLE TO MEMBERSHIP.

I. Eligible to Permanent Membership.

Eligibility to permanent membership is secured by service as a delegate at two annual meetings of this Society. Only members of county medical societies can become permanent members. Those eligible to permanent membership who desire to become members should make written application to the Secretary. (By-laws, Chap. I., Sec. 4, and Chap. VI., Sec. 3.)

Became eligible in 1892: O. D. Ball, Albany; Homer L. Bartlett, Flatbush; Simon Baruch, New York; Edward Clark, Buffalo; John Edwards, Gloversville; Earl D. Fuller, Utica; Wm. M. Gibson, Utica; Benjamin H. Grove, Buffalo; E. I. Harrington, Yonkers; Henry Hun, Albany; George J. Jackson, New York; W. W. Jamieson, New Bremen; J. M. Jenkins, Auburn; W. J. Nellis, Albany, W. P. Northrup, New York; Albert H. Palmer, Marlborough; Ernest Palmer, Brooklyn; T. K. Perry, Albany;

M. G. Planck, Schenectady; G. P. K. Pomeroy, Stuyvesant; J. W. Poucher, Poughkeepsie; J. H. Raymond, Brooklyn; Wm. Wotkyns Seymour, Troy; Robert B. Talbot, New York; Franklin Townsend, Albany; W. T. Williams, Rochester.

Previously eligible: James M. Barrett, Owego; James E. Crisfield, Dansville; John Dorning, New York; David D. Jennings, New York; John M. Maloney, Eddytown; O. W. Peck, Oneonta; Charles A. Powers, New York; Barton D. Skinner, Greenport; Nathan Smith, Richmondville; E. T. Strong, Elizabethtown; Avery Cook, Orange; James H. Anderson, New York; Christopher Prince, New York; Edward H. Janes, New York; Isaac H. Barber, Kings; Horace Lathrop, Otsego; Wm. Bassett, Broome; F. A. Burrall, New York; G. M. Smith, New York; Wm. H. Nelson, Oneida; Joseph Gardner, Oswego; Safford G. Hale, Essex; W. F. Nutten, Wayne; Ira F. Hart, Chemung; Wm. H. Leonard, Otsego; N. W. Bates, Oswego; Edwin Barnes, Dutchess; C. S. Bull, New York; Alfred Hasbrouck, Dutchess; John Lambert, Washington; George M. Palmer, Wyoming; Charles M. Lee, Oswego; D. B. Howard, Warren; Maurice Perkins, Schenectady; Wm. T. Plant, Onondaga; Conant Sawyer, Cayuga; W. R. Birdsall, New York; John C. Boyd, Orange; E. E. Houghton, Otsego; A. M. Jacobus, New York; F. M. Hamlin, Cayuga; L. E. Jones, Jefferson; Milton J. Roberts, New York; L. Emmett Holt, New York; Wm. M. McLaury, New York; R. J. Roscoe, Schoharie; M. H. Turner, Essex; H. D. Blanchard, Otsego; Henry W. Boorn, Otsego; C. C. Harvey, Yates; Wm. E. Johnson, Tioga; J. Alexander Moore, New York; Prince A. Morrow, New York; Joseph Pero, Oswego; Charles Dickinson, Schoharie; F. W. Putnam, Broome; S. J. Banker, Washington; B. F. Westbrook, Kings.

II. Eligible to Honorary Membership.

Only physicians residents of other States or foreign countries, not exceeding six in number in one year, can be elected Honorary Members, and they must have been nominated at a previous annual meeting.

The following were made eligible to Honorary Membership in 1892:

Grailly Hewitt, London, Eng.; O. E. Herrick, Grand Rapids, Mich.; I. S. Stone, Washington, D. C.; Arthur T. Cabot, Boston, Mass.; J. Lee McComas, Oakland, Md.; J. H. Packard, Philadelphia, Pa.; Mordecai Price, Philadelphia, Pa.; E. L. Shurly, Ann Arbor, Mich.; Heneage Gibbes, Ann Arbor, Mich.

Previously eligible: 1889, Lennox Browne, London, Eng.; 1887, H. C. Allchin, London, Eng.; 1880, W. Carpenter, Burlington, Vt.; 1871, J. J. H. Love, Montclair, N. J.; 1868, W. Livingston, St. Johns, N. B.; 1863, H. G. Stevens, St. Albans, Vt.; Ralph Deming, Litchfield, Conn.

COUNTY MEDICAL SOCIETIES.

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in October; semi-annual, second Tuesday in May. Stated meetings are held Wednesday evening at Alumni Hall, Albany Medical College, at least once a month, from October to May.

Officers. (October, 1891.)

Henry Hun, *President.* T. F. C. Van Allen, *Vice-President.*
G. E. Lochner, *Secretary.* J. V. Hennessy, *Treasurer.*

Censors: M. J. Lewi, F. C. Curtis, J. D. Featherstonhaugh, J. L. Cooper, W. B. Sabin.

Committee on Hygiene: E. A. Bartlett, W. O. Stillman, L. Balch, F. C. Curtis, J. D. Featherstonhaugh, T. K. Perry.

Delegates to State Medical Society: O. D. Ball, Henry Hun, W. J. Nellis, T. K. Perry.

Members.

(Where the town is not mentioned Albany is to be understood.)

H. C. Abrams, Newtonville
J. L. Archambeault, Cohoes
Robert Babcock, 59 Eagle st
Theodore P. Bailey, 95 Eagle st
Wm. H. Bailey, 1 Washington av
Lewis Balch, 14 Washington av
O. D. Ball, 691 Broadway
James F. Barker, 54 Clinton av
E. A. Bartlett, 20 S. Hawk
Hiram Becker, New Salem
Thomas Becket, 276 Washington av
Herman Bendell, 178 State st
J. M. Bigelow, 52 Eagle st
L. E. Blair, 204 State st
J. H. Blatner, 132 Hudson av
A. J. Blessing, 109 Grand st
L. Boudrias, 18 Seneca st., Cohoes
James P. Boyd, 152 Washington av
James E. Brennan, 135 N. Pearl st
A. S. Capron, 66 Westerlo st
T. L. Carroll, 296 Lark st
Daniel C. Case, Slingerlands
H. S. Case, 136 Madison av
R. D. Clark, 66 Eagle st
F. L. Classen, 15 Trinity Place
E. V. Colbert, 4 Union st
D. H. Cook, 264 Clinton av
John L. Cooper, 86 Clinton av
Joseph D. Craig, 12 Ten Broeck st
C. H. Crawford, 216 Hudson av
Hiram Crounse, Clarksville
Jesse Crounse, Altamont
C. M. Culver, 36 Eagle st
F. C. Curtis, 17 Washington av
J. R. Davidson, South Bethlehem
A. DeGraff, Guilderland
G. R. DeSilva, Preston Hollow
C. Devol, 48 Franklin st
Mary Dubois, 192 Hamilton st
M. J. Dwyer, 3 Lancaster st
Noah L. Eastman, 427 Clinton av
G. E. Elmendorf, Alcove
J. D. Featherstonhaugh, Cohoes
P. E. Fennelly, West Troy
Frank H. Fisk, 1 Clinton Square
Amos Fowler, 29 Second st
S. H. Freeman, 77 Columbia st
L. C. B. Graveline, 181 Madison av

F. R. Greene, 626 Central av
Wm. Hailes, Jr., 197 Hamilton st
Edwin Haines, South Westerlo
Lorenzo Hale, 194 Clinton av
W. H. Happle, 822 S. Pearl st
E. C. Hallenbeck, Bethlehem Centre
J. M. Haskell, Bath-on-the Hudson
J. U. Haynes, 76 Remsen st, Cohoes
Thomas Helme, McKownsville
John V. Hennessy, 137 North Pearl
G. W. Holding, West Troy
D. W. Houston, Cohoes
Alfred B. Huested, State cor. Eagle st
Henry Hun, 149 Washington av
Thomas Hun, 33 Elk st
P. J. Keegan, 48 Clinton av
Albert W. Kilbourne, 741 Broadway
Uriah B. La Moure, 90 Hudson av
E. E. Larkin, 47 Eagle st
Louis Le Brun, 254 S. Pearl st
George G. Lempe, 57 Eagle st
Joseph Lewi, 94 Westerlo st
Maurice J. Lewi, 71 Lancaster st
G. E. Lochner, 1 Hawk st
George E. Lyon, West Troy
W. C. Marselius, 28 Eagle st
J. D. Montmarquet, Cohoes
John D. McAllister, 78 Hudson av
W. G. Macdonald, 27 Eagle st
M. McHarg, 850 Madison av
H. McNaughton, 3 South Hawk st
William McNaughton, West Troy
H. E. Mereness, 184 State st
C. S. Merrill, 23 Washington av
Howard Miller, 29 S. Lexington av
J. H. Mitchell, Cohoes
C. H. Moore, 341 Hudson av
F. D. Morrill, 74 Westerlo st
Samuel R. Morrow, 29 S. Hawk st
Frank G. Mosher, Coeymans
G. T. Moston, 626 Central av
George S. Munson, 30 Eagle st
P. M. Murphy, 66 Jay st
Wm. H. Murray, 269 Lark st
T. W. Nellis, 44 Eagle st
W. J. Nellis, 44 Eagle st
G. H. Newcomb, 106 Chestnut st
D. V. O'Leary, 12 Ash Grove Place
Howard S. Paine, 105 State st
G. W. Papen, Madison av cor Hawk
G. Upton Peltier, Cohoes
T. Kirk Perry, 174 Second st
Samuel Peters, Cohoes
Charles H. Porter, 103 Lancaster st
Alonzo T. Powell, Coxsackie
W. L. Purple, 46 Second st
W. H. T. Reynolds, 70 S. Hawk st
J. W. Ross, Cohoes
Arthur G. Root, 46 Eagle st
Selwyn A. Russell, 206 Lancaster st
William B. Sabin, West Troy
C. F. Scattergood, 49 Eagle st
Wm. L. Schutter, 279 Clinton av
Seth G. Shanks, 547 Clinton av
J. V. Sheppy, 624 Division st
J. C. Shiland, West Troy
J. H. Skillicorn, 324 Hudson av
Chas. H. Smith, 246 Washington av
J. E. Smith, 246 Washington av
R. J. Smith, 114 Jay st
Julius B. Southworth, 47 Eagle st
B. U. Steenberg, 1 Ten Broeck st
W. O. Stillman, 287 State st
John Ben. Stonehouse, 241 Elm st
J. H. Timmers, 383 Madison av
John Thompson, 5 Canal st
Franklin Townsend, Jr., 2 Park Place
T. Markley Trego, 32 Clinton av
Willis G. Tucker, College Building
G. L. Ullman, 92 Central av
T. F. C. Van Allen, 48 Eagle st
Albert Vander Veer, 28 Eagle st
Howard Van Rensselaer, 94 Columbia
E. VanSlyke, 91 Westerlo st
A. T. VanVranken, West Troy
S. B. Ward, 135 North Pearl st
J. B. Washburne, Delmar
Felix Weidman, Westerlo
G. A. Williams, 6 Kenmore Place
L. B. Winne, 72 Livingston av
C. E. Witbeck, Cohoes
Harriet A. Woodward, 190 Lancaster st

Number of Members, 146.

Non-resident Members.

Wm. L. Allen, Greenbush
O. Britton, Binghamton
R. F. MacFarlane, Long Island City
Albert Marsh, Boston, Mass.
Selwyn A. Russell, Poughkeepsie
A. P. Ten Eyck, De Freestville
Thomas H. Willard, New York City

Deceased: David Fleischman, Albany, January 30, 1892; H. W. Steenberg, Green Island.

MEDICAL SOCIETY OF THE COUNTY OF ALLEGANY.

(Date of organization unknown.)

MEETINGS.—Annual, third Wednesday in June; quarterly, third Wednesday in September, December, and March.

Officers. (June, 1891.)

C. C. Deming, *President.* H. A. Barney, *Vice-President.*
A. E. Willard, *Secretary and Treasurer.*

Censors: W. W. Crandall, A. E. Willard, G. H. Witter, Otis Allen, H. P. Saunders.

Committee on Hygiene: A. E. Willard, J. W. Coller, F. C. Davie.

Delegate to State Medical Society: G. H. Witter.

Members.

Otis Allen, Cuba
Seneca Allen, Cuba
H. A. Barney, Belmont
C. R. Bowen, Almond
George E. Burdick, Alfred
J. W. Coller, Wellsville
F. E. Comstock, Andover
A. W. Cottrell, Whitesville
W. W. Crandall, Wellsville
Dorr Cutler, Bolivar
J. L. Cutler, Bolivar
F. C. Davie, Angelica
C. C. Deming, Friendship
H. F. Gillett, Cuba
S. W. Green, Wellsville
W. I. Hewitt, Friendship
O. N. Latham, Bolivar
H. H. Lyman, Fillmore
G. C. McNett, Bath
Benjamin Norton, Belmont
H. H. Nye, Wellsville
Charles W. O'Donnel, Andover
H. A. Place, Ceres
H. P. Saunders, Alfred Centre
Mark Sheppard, Alfred Centre
F. N. Smith, Allentown
William M. Smith, Angelica
O. T. Stacy, Rochester, Monroe Co.
A. W. Sullivan, Richburg
T. S. Thomas, Black Creek
M. B. Titus, Whitesville
Chas. J. Tucker
W. F. Wells, Rushford
A. E. Willard, Friendship
G. H. Witter, Wellsville

Number of Members, 35.

Deceased: A. J. Remington, Whitesville.

MEDICAL SOCIETY OF THE COUNTY OF BROOME.

(Organized July 4, 1806.)

MEETINGS.—Annual, first Tuesday in October; quarterly, first Tuesday in January, April, and July.

Officers. (October, 1891.)

E. A. Pierce, *President.* R. A. Seymour, *Vice-President.*
L. D. Farnham, *Secretary.* E. H. Wells, *Treasurer.*

Censors: J. H. Chittenden, J. G. Orton, C. B. Richards, John M. Farrington, S. P. Allen.

Delegate to State Medical Society: D. S. Burr.

Members.

(Where the name of the town is not given, Binghamton is to be understood.)

S. P. Allen, Whitney's Point
N. R. Barnes, 140 Oak st
H. F. Beardsley, 500 Chenango st
E. L. Bennett, 273 Chenango st
J. W. Booth, West Colesville
W. A. Brooks, 119 Court st
D. S. Burr, 145 Court st
J. H. Chittenden, 51 Main st
J. C. Comstock, Henry st and Prospect
Dwight Dudley, Maine
H. T. Dunbar, 106 Main st
Chas. C. Eastman, Binghamton State Hospital
L. O. Eastman, Union
I. C. Edson, Windsor
H. O. Ely, 62 Front st
J. M. Farrington, 11 Jay st
L. D. Farnham, 42 Main st
J. F. Fitzgerald, Binghamton State Hospital
F. L. Forker, 38 Fayette st
K. C. French, Lisle
C. W. Greene, Chenango Forks
L. Griffin, 145 Court st
L. H. Hills, 3 Dwight Block
F. P. Hough, 89½ Oak st
C. W. Ingraham, 259 Chenango st
W. E. Johnson, Lestershire
F. D. Lamb, Halstead, Pa.
Nathaniel Lowe, 69 Washington st
S. F. McFarland, 76 Front st
I. D. Meacham, Hammond Block
W. A. Moore, 223 Washington st
E. Mulheron, 78 Front st
J. G. Orton, Henry st and Prospect av
Geo. E. Pierson, Kirkwood
E. A. Pierce, 259 Chenango st
J. F. Pratt, 41 Main st
F. W. Putnam, 210 Vestal av
John F. Place, Jr., 134 Court st
B. E. Radeker, Deposit
C. B. Richards, 86 Front st
H. C. Rodgers, 1 Wall st
R. A. Seymour, Whitney's Point
W. R. Sitler, Ross Block
F. E. Slater, 2 Lydia st
Ed. L. Smith, 29 Myrtle av
E. L. Spencer, Windsor
A. F. Taylor, Castle Creek
E. L. Teed, Centre Lisle
C. W. Tiffany, 45 Court st
J. L. VanAlstyne, 100 Hawley st
E. H. Wells, 36 Henry st
O. J. Willsey, Binghamton State Hospital
W. H. Wilson, Lestershire
L. D. Witherill, Union

Number of Members, 54

Honorary Members.

E. G. Crafts, Binghamton, N. Y.
W. W. Fletcher, Susquehanna, Pa.
P. A. Hayes, Afton, N. Y.
Jas. Ross, Utica, N. Y.
Geo. O. Williams, Greene, N. Y.
J. L. Whitney, Union, N. Y.
W. W. Whitney, Union, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF CATTARAUGUS.

MEETINGS.—Annual, at Salamanca, the first Wednesday of May; quarterly, on the first Wednesday of August, November, and February.

Officers. (June, 1892.)

George Lattin, *President.* Fred. C. Beales, *Vice-President.*
M. C. Hawley, *Secretary and Treasurer.*

Censors: L. L. Deck, A. W. Smallman, S. V. Pool.

Delegates to State Medical Society: F. C. Beales, S. V. Pool.

Members.

Horace Babcock, Gowanda
C. H. Bartlett, Olean
F. H. Bartlett, Olean
Fred. C. Beales, Salamanca
S. S. Bedient, Little Valley
M. C. Bissell, Limestone

F. B. Blair, Allegany
E. J. Burlingame, Sandusky
J. P. Colegrove, Salamanca
G. B. Crandall, Randolph
Lyman L. Deck, Salamanca
E. W. Dutcher, Allegany
John L. Eddy, Olean
V. A. Ellsworth, East Otto
F. D. Findlay, Franklinville
M. C. Follett, Olean
M. C. Hawley, East Randolph
Wm. B. Johnston, Ellicottville
Sophia B. Jones, Cattaraugus
Clarence King, Machias
A. D. Lake, Perrysburg
George Lattin, Cattaraugus
S. B. McClure, Allegany
S. J. Mudge, Olean
S. V. Pool, Otto
J. Powers, Olean
R. F. Rowley, Portville
J. H. Sackrider, East Randolph
William Sage, Olean
Nelson Saunders, Randolph
E. M. Shaffner, Great Valley
Alfred W. Smallman, Ellicottville
H. D. Snover, Steamburg
E. S. Stewart, Ellicottville
Ransom Terry, Ischua
O. A. Tompkins, Randolph
Edward Torrey, Allegany
F. E. Tuttle, Leon
Henry Van Aernam, Franklinville
H. D. Walker, Franklinville
C. M. Walrath, Ellicottville
L. Whitney, Olean

Number of Members, 38.

Deceased: C. O. Day, of Salamanca.

MEDICAL SOCIETY OF THE COUNTY OF CAYUGA.

(Organized August 7, 1806.)

MEETINGS.—Annual, second Thursday in June; semi-annual, second Thursday in December. Regular meetings the second Thursday in each month.

Officers. (June, 1892.)

W. I. Hoag, *President.* A. F. Hodgeman, *Vice-President.*
Susan G. Otis, *Secretary.* William S. Cheesman, *Treasurer.*

Committee on Hygiene: J. P. Creveling, Amanda S. Hickey, Sheldon Voorhees.

Delegates to State Medical Society: W. S. Cheesman, J. M. Jenkins.

Delegates to American Medical Association: A. L. Hall, F. H. Parker.

Members.

(When no town is mentioned Auburn is to be understood.)

H. E. Allison, State Asylum for Insane Criminals
Charles Atwood, Moravia
E. P. Baker, Aurora
C. O. Baker, 65 Genesee street
F. H. Benedict, Weedsport
M. O. Bentley, Weedsport
N. D. Blood, 1 Cayuga street
John I. Brinkerhoff, 60 North street
B. J. C. Buckland, Fleming
W. S. Cheesman, 22 William street
George E. Clark, Skaneateles
O. C. Clark, Weedsport
H. H. Coleman, Kings Ferry
M. P. Conway, 132 Genesee street
W. T. Cox, Moravia
J. V. Creveling, 22 South street
A. L. Cummings, Cayuga
Robert Hill Dee, Fair Haven
F. A. Dudley, Kings Ferry
George A. Edmonds, Moravia
C. A. Fisher, Victory
B. A. Fordyce, Union Springs
E. S. Forman, 55 Genesee street
John Gerin, 68 North street
D. J. Gilbert, Cato
W. W. Gray, 41 Franklin street
George W. Green, E. Genesee street
C. A. Groot, Cato
A. L. Hall, Fair Haven
F. M. Hamlin, 18 South street
W. I. Hoag, Sherwood
A. F. Hodgeman, 4 William street
Amanda S. Hickey, 28 South street

J. H. Horton, Kelloggsville
Sophia E. Howard, 28 South street
B. K. Hoxie, 42 Elizabeth street
Frank Hoxie, Union Springs
J. M. Jenkins, 162 Genesee street
Nettie E. Jenkins, 162 Genesee street
L. C. Jones, State Insane Asylum
Frank Kenyon, Scipio
Mary Kenyon, Kings Ferry
Wm. R Laird, 98 Wall street
R. B. Lamb, State Asylum for Insane Criminals
Charles L. Lang, Meridian
Leroy Lewis, 14 Washington street
W. O. Luce, 12 William street
F. E. Maine, 33 Grover street
Marcia T. Morse, 1 Garden street
B. E. Osborn, 38 Fulton street
Susan G. Otis, 40 South street
F. H. Parker, 156 Genesee street
Frank Ryan Kelloggsville
Conant Sawyer, 10 Nelson street
Fred. Sefton, "The Pines," Auburn
George Slocum, Genoa
A. D. Stewart, Port Byron
J. D. Tripp, 163 Genesee street
M. B. Van Buskirk, Genoa
Sheldon Voorhees, 88 North street
J. W. Whitbeck, Cayuga
D. A. White, Montezuma

Number of Members, 62.

MEDICAL SOCIETY OF THE COUNTY OF CHAUTAUQUA.

MEETINGS.—Annual, second Tuesday in July; semi-annual, third Tuesday in December.

Officers. (July, 1891.)

Ai Waterhouse, *President.* N. G. Richmond, *Vice-President.*

A. H. Bowers, *Secretary and Treasurer.*

Censors: T. D. Strong, A. H. Bowers.

Delegates to State Medical Society: H. J. Dean, Edward Ames.

Members.

Edward Ames, Sherman
Mrs. Mary A. Armstrong, Jamestown
F. A. Beebe, Findley's Lake
M. L. Bemus, Jamestown
W. M. Bemus, Jamestown
M. N. Benjamin, Dunkirk
George E. Blackham, Dunkirk
R. L. Blanchard, Jamestown
A. H. Bowers, Jamestown
E. E. Boyd, Ashville
H. J. Boyd, Watt's Flats
William H. Chace, 266 Connecticut street, Buffalo
F. B. Darling, Westfield
H. J. Dean, Brocton
Albert de Bey, Clymer
Weldon A. Dickson, Jamestown
G. E. Ellis, Sherman
R. M. Evarts, Irving
S. E. Ford, Clymer
H. H. Glidden, Panama
H. P. Hall, Jamestown
G. W. Hazeltine, Jamestown
Laban Hazeltine, Jamestown
Ed. R. Hopkins, Silver Creek
R. D. Kahle, Kennedy
J. J. Lenhart, Bemus Point
John C. Lewis, Panama
A. S. Livingstone, Jamestown
A. E. Lundgren, Jamestown
L. P. McCray, Clymer
G. D. Marsh, Sherman
MacDonald Moore, Fredonia
J. W. Morris, Jamestown
James Murphy, Sherman
M. R. Palmer, Jamestown
C. J. Phillips, Jamestown
E. S. Rich, Kennedy
N. G. Richmond, Fredonia
R. T. Rolph, Dunkirk
H. R. Rogers, Dunkirk
E. Rood, Westfield
Artemas Ross, Clymer
E. A. Schofield, Bemus Point
E. M. Schofield, Jamestown
J. J. Sharp, Silver Creek
O. C. Shaw, Kennedy
Aaron Skinner, Asheville
A. H. Smith, Fredonia
A. A. Stevens, Jr., Sinclairville
T. D. Strong, Westfield
J. J. Towle, Jamestown
P. A. Walling, Clymer
A. Waterhouse, Jamestown
C. H. Waterhouse,
J. H. Wiggins, Jamestown
T. C. Wilson, Dewittville

Number of Members, 56.

Deceased: William Chase, Mayville.

MEDICAL SOCIETY OF THE COUNTY OF CHEMUNG.

(Organized May 6, 1836.)

MEETINGS.—Annual, third Tuesday in June; quarterly, in September, December, and March.

Officers. (June, 1891.)

John Moroney, *President.* T. A. Wales, *Vice-President.*
Jonas Jacobs, *Secretary.* C. L. Squire, *Treasurer.*
Censors: T. A. Dundas, J. E. Eldred. William C. Wey, E. A. Reilley.
Delegate to State Medical Society: H. D. Wey.

Members.

(Where no town is mentioned Elmira is to be understood.)

Chas. E. Annabel, 111 W. Hudson st
L. W. Bailey, Millport
George M. Beard, Millport
C. W. M. Brown, 311 Baldwin street
M. M. Brown, 265 W. Clinton
R. P. Bush, Horseheads
Reuben R. Chilson, 610 W. Church st
W. E. Colegrove, Horseheads
E. H. Davis, 202 E. Water street
E. G. Drake, 412 W. Church street
T. A. Dundas, 257 Baldwin street
John E. Eldred, 107 South Main st
F. H. Flood, 505 East Water street
Henry Flood, 403 Lake street
H. H. Ford, 422 West Church street
J. W. Gee, Van Ettenville
C. S. Gere, Chemung
Ebenezer Gere, Chemung.
Ira F. Hart, 306 East Church st
C. F. Hawkins, Breesport
J. Stewart Hill, 151 Lake st
F. W. Huff, Wellsburg
Jonas Jacobs, 251 Baldwin st
O. A. Jakeway, Breesport
C. G. R. Jennings, 272 Baldwin st
A. I. Le Fevre, Erin
J. Moroney, 328 Baldwin st
L. H. Merchant, 523 East Union st
G. V. R. Merrill, 458 Spaulding st
D. P. Merritt, 313 W. Clinton st
N. Sanford Messenger, Breesport
B. W. Morse, W. Church st
J. C. O'Brien, 504 Pennsylvania av
Wm. H. Olmstead, Horseheads
F. B. Parke, 33 E. Water st
R. B. Pratt, Baldwin and Market sts
H. DeV. Pratt, Jr., 118 Main st
D. H. Reardon, 53 South Main st
E. A. Reilly, 312 Baldwin st
Frank W. Ross, 326 Baldwin st
N. H. Soble, 500 E. Water st
C. L. Squire, 409 East Church st
S. F. Stagg, 151 West Third st
T. S. Updegraff, Robinson Building
E. H. Wakelee, Big Flats
T. A. Wales, 403 William st
J. A. Westlake, 1219 Lake st
Hamilton D. Wey, 359 Main st
William C. Wey, 359 Main st
Charles Woodward, 205 Gray st

Number of members, 50

Non-Resident Members.

E. P. Allen, Athens, Pa.
J. H. Cole, Gillett, Pa.
H. M. Darling, Corning, N. Y.
W. D. Davison, Canton, Pa.
Edward Mills, Ulster, Pa.
P. B. Roper, Alpine, N. Y.
C. Voorhees, Daggett's Farm, Pa.

MEDICAL SOCIETY OF THE COUNTY OF CHENANGO.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January 12, 1892.)

O. A. Gorton, *President.* T. G. Packer, *Vice-President.*
R. A. Thompson, *Secretary.* S. M. Hand, *Treasurer.*

Censors: (None elected.)

Delegate to State Medical Society: G. O. Williams.

Members.

L. C. Andrews, Pitcher
Louis P. Blair, McDonough
L. J. Brooks, Norwich
Vincent Burgess, Brisben
Alvin B. Church, Oneonta, Otsego Co.
H. D. Copley, Bainbridge
C. W. Crumb, Sherburne
DeWitt C. Crumb, Otselic
George Douglas, Oxford
Thomas Dwight, Preston
H. S. Dye, New Berlin
E. L. Ensign, Oxford
R. D. L. Evans, Bainbridge
H. S. Gardiner, Hamilton
S. C. Gibson, South New Berlin
D. A. Gleason, Oxford
O. A. Gorton, Sherburne
J. D. Guy, Coventry
Horace Halbert, Canastota
S. M. Hand, Norwich
Blinn A. Harris, Norwich
P. A. Hayes, Afton
J. V. Jacobs, Mt. Upton
Reuben Jeffrey, Brooklyn
George D. Johnson, Greene
L. M. Johnson, Greene
D. M. Lee, Oxford
J. V. Lewis, North Norwich
F. S. Lovell, South Otselic
E. S. Lyman, Sherburne
H. C. Lyman, Sherburne
S. F. McFarland, Binghamton
J. D. Mosher, Norwich
J. B. Noyes, New Berlin
B. J. Ormsby, Norwich
Thurston G. Packer, Smyrna
C. M. Purdy, Norwich
B. F. Smith, Mt. Upton
H. E. Smith, Norwich
M. E. Smith, Greene
S. L. Smith, Smithville Flats
M. D. Spencer, Guilford
W. H. Stuart, Norwich
R. A. Thomson, Norwich
J. M. Thorp, Oxford
G. S. Weaver, McDonough
H. H. White, Earlville, Madison Co.
G. O. Williams, Greene
H. G. Willse, South Edmeston

Number of members, 49.

MEDICAL SOCIETY OF THE COUNTY OF CLINTON.

MEETINGS.—Annual, second Tuesday in September; semi-annual, second Tuesday in June.

Officers. (January 12, 1892.)

R. E. Hyde, *President.*
J. M. Hackett, *1st Vice-President.* C. B. Vaughan, *2d Vice-President.*
E. M. Lyon, *Recording Secretary.* D. S. Kellogg, *Corresponding Secretary.*
T. B. Nichols, *Treasurer.*

Delegate to State Medical Society: Frank Madden.

Members.

C. W. Arthur, Plattsburg
M. D. Briggs, Champlain
M. S. Carpenter, Clinton
Joel Chandler, Mooers
C. A. Church, Bloomingdale
W. E. Clough, West Chazy
L. C. Dodge, Rouse's Point
A. W. Fairbank, Chazy
J. M. Fulton, Beekmantown
J. M. Hackett, Champlain
Charles S. Haynes, Redford
Samuel Haynes, Saranac
O. A. Holcomb, Plattsburg
W. S. Housinger, West Chazy
W. T. Housinger, West Chazy
E. S. Howe, Ausable Forks
R. E. Hyde, Beekmantown
D. S. Kellogg, Plattsburg
F. D. Kinsley, Peru
J. H. La Rocque, Plattsburg
E. M. Lyon, Plattsburg
J. G. McKinney, Schuyler Falls
Frank Madden, Plattsburg
S. Mitchell, Jr., Saranac
E. W. Morehouse, Peru
J. A. Nichols, New York

T. B. Nichols, Plattsburg
J. B. Ransom, Dannemora
O. H. Riley, Mooers
E. A. Robinson, Ellenburg
H. H. Rust, Ellenburg
J. H. Smith, Plattsburg
W. V. Taylor, Mooers
C. B. Vaughan, Morrisonville
D. B. Woodward, Ellenburg
Number of members, 36.

Deceased: G. D. Dunham, Plattsburg, November 29, 1892, aged 52; T. W. Haynes, LaColle, P. Q., March 19, 1892, aged 59; J. D. Woodworth, Redford, ——.

MEDICAL SOCIETY OF THE COUNTY OF COLUMBIA.

MEETINGS.—Annual, first Tuesday in October at City Hall, Hudson, N. Y.; semi-annual, first Tuesday in June at Chatham, N. Y.

Officers. (October, 1891.)

George P. K. Pomeroy, *President.* Wilmer I. Gordon, *Vice-President.*
Milford L. Bates, *Secretary and Treasurer.*

Censors: George E. Benson, G. P. K. Pomeroy, A. R. Van Dusen, C. E. Fritts, N. H. Mesick.

Delegate to State Medical Society: George P. K. Pomeroy.

Members.

J. H. Allen, Churchtown
Milford L. Bates, Canaan Four Corners
John C. Benham, Hudson
George E. Benson, Hudson
O. Howard Bradly, Hudson
Henry Cornell, Hillsdale
Wm. H. Crocker, Ancram
P. S. Flanagan, Lebanon Springs
Crawford E. Fritts, Hudson
John J. Glover, Stuyvesant Falls
Wilmer I. Gordon, Copake Iron Works
N. D. Guernsey, Kinderhook
Jacob Horton, Livingston
Martin M. Kittel, Ghent
F. T. Kunker, North Chatham
Isaac H. Lent, Valatie
Jordan W. Lockwood, Philmont
Nelson H. Mesick, Glenco Mills
Robert H. Morey, Old Chatham
Wm. B. Platner, Germantown
George P. K. Pomeroy, Stuyvesant
George W. Rossman, Ancram
P. W. Shufelt, East Taghkanic
H. Lyle Smith, Hudson
Wm. O. Smith, Germantown
F. S. Snow, Valatie
Wm. H. Stickles, Philmont
Wm. D. Swain, Copake
A. R. Van Dusen, Claverack
George W. Vedder, Philmont
R. H. Vedder, Chatham Centre
I. C. Washburne, Chatham
H. G. Westlake, Hillsdale
John T. Wheeler, Chatham
George D. Wight, New Lebanon
Thomas Wilson, Claverack
Richard A. Woodruff, Philmont
T. F. Woodworth, Kinderhook
Number of members, 38.

MEDICAL SOCIETY OF THE COUNTY OF CORTLAND.

(Organized August 10, 1808.)

MEETINGS.—Annual, second Thursday in June; semi-annual, second Thursday in December; quarterly, second Thursdays in September and March.

Officers. (June, 1892.)

H. D. Hunt, *President.* C. B. Trafford, *Vice-President.*
Frank H. Green, *Secretary and Treasurer.*

F. H. Green, *Librarian.*

Censors: G. D. Bradford, W. Y. Bliss, C. E. Bennett, H. S. Edson.

Delegate to State Medical Society: —— ——

Members.

Jerome Angel, Cortland
E. H. Barnes, Marathon
Charles E. Bennett, Cortland
W. Y. Bliss, Tully, Onondaga Co.
George D. Bradford, Homer
Daniel W. Burdick, Homer
Henry T. Dana, Cortland
E. A. Didama, Cortland
H. Sheldon Edson, Cortland
Wm. Fitch, Dryden, Tompkins Co.
F. H. Frisbee, McGrawville
Caleb Green, Homer
Frank H. Green, Homer
M. L. Halbert, Cincinnatus
A. L. Head, Homer
H. C. Hendrick, McGrawville
Francis W. Higgins, Cortland
J. W. Hughes, Cortland
Herman D. Hunt, Preble
Homer O. Jewett, Cortland
Benj. Kenyon, Cincinnatus
Edward M. McBirney, Willett
—— Miles, Marathon
W. J. Moore, Cortland
Philip Neary, Union Valley
Judson C. Nelson, Truxton
A. D. Read, Marathon
Frank D. Reese, Cortland
M. R. Smith, McGrawville
C. B. Trafford, Marathon
Sumner C. Webb, Homer
A. J. White, Cortland

Number of Members, 32.

Deceased: Dewey H. Stone, Homer.

MEDICAL SOCIETY OF THE COUNTY OF DELAWARE.

(Organized July 1, 1806.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in February.

Officers. (June, 1892.)

W. D. Heimer, *President*, Wm. Ormiston, *Vice-President*.
G. C. Smith, *Secretary*. H. N. Buckley, *Treasurer*.

Censors: Thomas Wight, G. C. Smith, R. R. Thompson.
H. A. Gates, J. N. Wright.

Delegate to State Medical Society: H. A. Gates.

Members.

O. M. Allabeen, Margaretville
G. P. Bassett, Downsville
Howard Bell, Delhi
I. C. Bourne, Masonville
George H. Brinkman, Davenport
H. N. Buckley, Delhi
J. J. Buckley, Minnesota
O. Bundy, Deposit, Broome Co.
John Calhoun, Delhi
S. S. Cartwright, Roxbury
S. E. Churchill, Stamford
John Clark, Delhi
Samuel A. Cottrell, Cannonsville
Wm. H. Crawford, Andes
S. Decker, Griffin's Corners
Gilbert J. Dickson, Bovina
J. M. Donnelly, Davenport
T. M. Edwards, Iowa
E. W. Gallup, Stamford
H. A. Gates, Delhi
J. A. Gladstone, Andes
W. D. Heimer, Hamden
A. F. Lombard, Meridith
D. H. Mann, Brooklyn, N. Y.
J. S. McLaurey, New York, N. Y.
A. McLaury, Pleasant Valley, Dutchess Co.
F. H. McNaught, Denver, Col.
J. S. McNaught, Hobart
E. A. Miller, Arena
John A. Montgomery, Walton
J. Newkirk, Roxbury
Herbert L. Odell, Hobart
G. S. Olin, Oneonta
Wm. Ormiston, Delhi
S. C. Pettingill, Hancock

J. S. Robinson, Prattsville
Gilbert Scott, Davenport
George C. Smith, Delhi
H. M. Smith, New Jersey
E. E. Snow, Walton
A. E. Sullard, Franklin
R. R. Thompson, Delhi
Thomas Wight, Andes
J. N. Wright, Grand Gorge
Number of Members, 44.

Deceased: J. R. Mathews, Bloomville; J. H. McLaren, Franklin; Homer B. Palmer, Denver, Col.

MEDICAL SOCIETY OF THE COUNTY OF DUTCHESS.

(Organized in 1806.)

MEETINGS.—Annual, second Wednesday in January, at Poughkeepsie; semi-annual, second Wednesday in June.

Officers. (January, 1892.)

H. C. Wilbur, *President.*
J. E. Sadlier, *Secretary.*
G. E. Coutant, *Vice-President.*
Charles H. Langdon, *Treasurer.*

Censors: Alfred Hasbrouck, Robert K. Tuthill, E. H. Gerow.

Delegates to State Medical Society: Howell White, J. W. Poucher.

Members.

B. N. Baker, Rhinebeck
Edwin Barnes, Pleasant Plains
H. Weston Barnum, Poughkeepsie
T. J. Barton, Red Hook
X. T. Bates, Poughkeepsie
Guy C. Bayley, Poughkeepsie
J. S. Bird, Hyde Park
Edward C. Bolton, Poughkeepsie
Nelson Borst, Poughkeepsie
R. J. Carroll, Red Hook
G. B. Chapman, Amenia Union
J. M. Cleveland, Poughkeepsie
G. H. Codding, Amenia
W. J. Conklin, Fishkill
H. L. Cookingham, Red Hook
Isaac M. Cornell, Wappinger's Falls
J. E. Courtney, State Asylum for Insane Criminals, Matteawan
G. E. Coutant, Poughkeepsie
Wm. Cramer, Poughkeepsie
Thomas K. Cruse, Wappinger's Falls
J. H. Doughty, Matteawan
H. K. DuBois, Bangall
D. W. Dumond, Millerton
R. F Duncan, Pleasant Valley
A. T. Fink, Freedom Plains
Charles L. Fletcher, South Dover
Elizabeth H. Gerow, Poughkeepsie
J. Haidlauf, Poughkeepsie
T. Hammond, Dover Plains
Alfred Hasbrouck, Poughkeepsie
W. Herrick, Milan
A. F. Hoag, Millerton
Frank T. Hopkins, Fishkill-on-Hudson
George T. Howland, Tivoli
Edwin L. Hoyt, Shultzville
J. M. Hunting, Standfordville
George Huntington, LaGrangeville
C. Hustis, Matteawan
J. M. Julian, Poughkeepsie
J. Kinkead, Poughkeepsie
C. M. Kittredge, Fishkill-on-Hudson
D. A. Knapp, North Clove
J. T. C. Lamb, Poughkeepsie
Charles H. Langdon, Poughkeepsie
I. D. Leroy, Pleasant Valley
E. Losee, Bangall
John E. Losee, Upper Red Hook
I. N. Mead, Amenia
J. E. Moith, Fishkill
Elizabeth R. G. Myer, Poughkeepsie
M. C. Northrup, McIntyre
Edward H. Parker, Poughkeepsie
J. C. Payne, Poughkeepsie
H. Pierce, Pawling
J. O. Pingry, Mill Brook
J. W. Poucher, Poughkeepsie
Horace R. Powell, Poughkeepsie
J. G. Porteous, Poughkeepsie
Churchil A. Pritchard, Tivoli
M. T. Pultz, Standfordville
L. E. Rockwell, Amenia
J. E. Sadlier, Poughkeepsie
D. W. Sheedy, Poughkeepsie
John M. Shepherd, Poughkeepsie
L. A. Sutton, East Fishkill
C. H. Thompson, Fishkill
I. H. Traver, Pleasant Valley
C. H. Tripp, Clinton Corners

R. K. Tuthill, Poughkeepsie
G. H. Van Wagner, Wappinger's Falls
David B. Van Wyck, Manchester Bridge
R. C. Van Wyck, Hopewell Junction
D. B. Ward, Poughkeepsie
W. S. Watson, Matteawan
G. M. Wellman, Dover Plains
Howell White, Fishkill
H. C. Wilbur, Pine Plains
P. T. Williamson, Poughkeepsie
J. P. Wilson, Poughkeepsie
J. S. Wilson, Poughkeepsie
L. C. Wood, Wappinger's Falls
W. C. Wright
J. Young, Fishkill-on-Hudson

Number of Members, 83.

Honorary Members.

R. Demming, Sharon, Conn.
H. Fountain, Yorktown
W. H. Helm, Sing Sing
Austin La Monte, Carmel
G. W. Murdock, Cold Spring
R. F. Weir, New York
N. W. Wheeler, Patterson

Removed: Theodore H. Kellogg, to Flushing; T. J. Kindred, to Edinburgh, Scotland.

MEDICAL SOCIETY OF THE COUNTY OF ERIE.

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January, 1892.)

Wm. Warren Potter, *President.*
Eli H. Long, *Secretary.*
Edward Clark, *Treasurer.*
Wm. H. Gail, *Vice-President.*
Ira C. Brown, *Assistant Secretary.*
Charles A. Ring, *Librarian.*

Censors: Edward Storck, John J. Walsh. H. R. Hopkins, Henry Lapp, P. W. Van Pyma.

Delegates to State Medical Society: Edward Clark, Herman E. Hayd, B. H. Grove, Edward C. W. O'Brien, Ernest Wende.

Membership Committee: A. A. Hubbell, John A. Pettit, W. C. Callanan.

Members.

(Where no town is mentioned Buffalo is to be understood.)

Frank W. Abbott, 223 Franklin st
George Abbott, Hamburg
Arthur B. Allen, 990 Genesee st
Thomas G. Allen, 419 Elk st
Judson B. Andrews, State Hospital
Wm. A. P. Andrews, 614 Jefferson st
J. Stone Armstrong, 195 14th st
Chas. H. W. Auel, 277 High st
Stanley C. Babcock, 2319 Main st
Wm. H. Baker, Williamsville
Lucius L. Ball, 190 Dearborn st
Edward H. Ballou, Gardenville
Rollin L. Banta, 358 S Division st
Westervelt Banta, 407 Perry st
Edwin R. Barnes, 1258 West av
William C. Barrett, 208 Franklin st
T. L. Barry Willink
F. W. Bartlett, 523 Delaware av
Bernard Bartow, 220 Franklin st
A. L. Benedict, 86 West Huron
Henry G. Bentz, 894 Michigan st
Wm. H. Bergtold, 56 Allen st
Weston D. Bidaman, 335 Connecticut st
Henry H. Bingham, 2485 Main st
Jay J. Birmingham, 123 Pratt st
Elias S. Bissell, 2793 Main st
John Boardman, 9 Court st
Henry W. Bode, 730 Genesee st
Loren F. Boies, Howard av
John D. Bonnar, 199 Franklin st
Bentley S. Bourne, Hamburg
Charles W. Bourne, Hamburg
F. E. L. Brecht, 361 William st
Albert H. Briggs, 267 Hudson st
Elmer E. Briggs, 904 Clinton st
Mark N. Brooks, Springville
George L. Brown, 173 Niagara st

Ira C. Brown, 411 14th st
Clark F. Bruso, 203 Amherst st
Frank A. Burghardt, 632 Elm st,
Paul F. Bussman, 637 Broadway
Henry C. Buswell, 358 S. Division st
Wm. C. Callanan, 51 W. Seneca st
Robert E. Campbell, 190 Niagara st
Louis Carmer, Williamsville
Charles Cary, 340 Delaware av
Wm. H. Chace, 266 Connecticut st
John S. Champlin, 1872 Niagara st
Chas. O. Chester, 438 Washington st
Chas. P. Clark, 236 E. Eagle st
Edward Clark, 271 Franklin st
Wm. P. Clothier, Williamsville
John B. Coakley, 339 Delaware av
Bernard Cohen, 540 Niagara st
Charles E. Congdon, 1034 Jefferson st
Miles B. Cook, 105 Glenwood av
Benjamin W. Cornwell, Buffalo
George F. Cott, 560 Michigan st
Albert H. Crawford, 274 Swan st
Floyd S. Crego, 280 Franklin st
Montgomery A. Crockett, 37 Allen st
John Cronyn, 55 W. Swan st
John L. C. Cronyn, 51 Franklin st
Alphonse Dagenais, 473 W. Virginia st
Bryon H. Daggett, 258 Franklin st
John Dambach, 417 Michigan st
Clayton M. Daniels, 868 Main st.
Earl G. Danser, 592 Walden av
Charles L. Dayton, 246 Dearborn st
Lewis P. Dayton, 15 Niagara st
Conrad Diehl, 32 W. Genesee st
Elias T. Dorland, 86 N. Division st
L. Bradley Dorr, 300 Jefferson st
Samuel G. Dorr, 300 Jefferson st
Wm. Dowlman, 536 Swan st
Sidney A. Dunham, 280 Franklin st
Thomas F. Dwyer, 268 Niagara st
Wesley C. Earl, 1541 Niagara st
David C. Eisbein, 399 Broadway.
Charles P. Eller, 1440 Jefferson st
Henry S. Ellwood, 9 W. Mohawk st
Clark E. Ernest, 282 W. Ferry st
Jacob M. Falk, 415 Pearl st
George E. Fell, 72 Niagara st
John D. Flagg, 125 E. Eagle st
M. B. Folwell, 713 Delaware av
Edgar A. Forsyth, 369 West av
Joseph Fowler, 31 Church st
Carlton C. Frederick, 64 Richmond av
Edward L. Gager, 413 Pearl st
Wm. H. Gail, East Aurora
Frank M. Gipple, Bowmansville
Jacob Goldberg, 145 Cedar st
Sigmund Goldberg, 584 N. Division st
John N. Goltra, 441 Elmwood av
Henry Y. Grant, 50 W. Tucker st
John R. Gray, 224 Front av
Stephen S. Green, 328 Niagara st
DeWitt C. Greene, 2 Elm st
Joseph C. Greene, 124 Swan st.
Walter D. Greene, 444 Elk st
Willis G. Gregory, 530 Main st
Joseph W. Grosvenor, 118 Plymouth av
Benjamin H. Grove, 334 Pearl st
Carl H. Guess, 73 Main st
Adelbert G. Guamer, 802 Bailey av
Joseph Haberstro, 89 High st
Devillo W. Harrington, 1430 Main st
Marcell Hartwig, 38 East Huron st
Leon F. Harvey, 19 W. Tupper st
John Hauenstein, 499 Washington st
Herman E. Hayd, 78 Niagara st
Robert Hebenstreet, 430 Broadway
F. E. Hill, 532 Swan st.
F. Whitehill Hinkel, 305 Delaware av
John A. Hoffmeyer, 150 East st
John Honsberger, 261 Emslie st
Henry R. Hopkins, 433 Franklin st
Charles F. Howard, 1415 Main st
Lucien Howe, 87 W. Huron st
Stephen Y. Howell, 164 Franklin st
Burt P. Hoyer, 216 N. Division st
F. F. Hoyer, Tonawanda
Alvin A. Hubbell, 212 Franklin st
Howard L. Hunt, Orchard Park
Arthur W. Hurd, State Hospital
Henry D. Ingraham, 405 Franklin st
Wm. H. Jackson, Springville
C. R. Jennings, Alden
Wm. E. Jennings, Boston
Carlton R. Jewett, 1299 Main st
Thomas M. Johnson, 309 Main st
Allen A. Jones, 436 Franklin st
Andrew Kamerling, 171 Bryant st
John Ketchum, 302 Hampshire st
A. B. Knisley, 356 Swan st
Jacob M. Kraus, E. Utica st.
Wm. C. Krauss, 382 Virginia st
Lewis Krombein, 246 Elm st
Julius F. Krug, 870 Broadway
Henry Lapp, Clarence
Clarence B. Le Van, 1223 Jefferson st
George W. T. Lewis, 318 Ashland av
Edward Little, 161 Main st
Benjamin G. Long, 520 Elmwood av
Eli H. Long, 1335 Main st
Benj. L. Lothrop, 81 Breckenridge st
Thomas Lothrop, 153 Delaware av
U. C. Lynde, 241 Swan st
John J. McCullough, 166 Goodell st
Wm. A. McFarlane, Springville
George H. McMichael, 63 Niagara st
George W. McPherson, Lancaster

John D. McPherson, Akron
Gustavus E. Mackay, 47 W. Swan st
Matthew D. Mann, 37 Allen st
J. Irving Marcley, 189 Franklin st
Andrew J. Martin, Clarence
H. G. A. Matzinger, State Hospital
Charles S. Meahl, 84 Williams st
John G. Meidenbauer, 204 High st
Reuben S. Meyers, Clarence Centre
Herbert Mickle, 9 Niagara st
John Middleton, 233 Massachusetts st
John G. Miller, Lancaster
Edwin A. Millring, 148 Chenango st
David A. Morrison, 662 Oak st
R. E. Moss, Gowanda
Henry J. Mulford, Delaware av
Henry B. Murray, Tonawanda
Wm. D. Murray, Tonawanda
Herman Mynter, 195 Franklin st
Henry Nichell, 80 Sycamore st
Clautzes J. Niemand, 554 Michigan st
Edward C. W. O'Brien, 439 Delaware av
M. J. O'Connell, Providence Retreat, Buffalo
Wm. J. Packwood, 459 Genesee st
Roswell Park, 510 Delaware av
L. P. L. Parker, Akron
John C. Parmenter, 372 Franklin st
R. L. Patterson, 537 Franklin st
George W. Pattison, 17 Court st
Albert E. Persons, 93 Mohawk st
John A. Pettit, 519 Swan st
Louis Pfandhoefer, 1023 Genesee st
Edward N. Pfohl, 88 Niagara st
Wm. C. Phelps, 146 Allen st
John T. Pitkin, 629 Main st
Gustav A. Pohl, 96 Lemon st
Julius Pohlman, Franklin st
James S. Porter, 289 Cedar st
Irving W. Potter, 749 Broadway
Julius H. Potter, 177 Dearborn st
Samuel Potter, Lancaster
Wm. W. Potter, 284 Franklin st
Fred H. Powell, 179 Franklin st
Frederick Preiss, 115 Franklin st
John H. Pryor, 253 Allen st
James W. Putnam, 388 Franklin st
Lillian C. Randall, 41 Otis Place
Michael Retel, 259 Broadway
W. Scott Renner, 361 Pearl st
Charles J. Reynolds, 891 Genesee st
Francis M. Rich, 284 Richmond av
Walter J. Riehl, 158 Swan st
Charles A. Ring, 364 Niagara st
Wm. G. Ring, 364 Niagara st
Wm. E. Robbins, Hamburg
De Lancey Rochester, 469 Franklin st
Benjamin F. Rogers, 221 Franklin st
Reuben M. Root, 537 William st
T. Haven Ross, 344 Ashland av
Clinton A. Sage, 224 W. Ferry st
James B. Sanno, 34 Tracy st
Louis Schade, 244 Goodell st
C. A. Schladermondt, 510 William st
Macy B. Searls, East Aurora
J. F. Sell, 8 South Division st
Thomas J. G. Sheehan, 307 Elk st
Harriet E. Sheldon, 433 Breckenridge st
George H. Sisson, 187 Plymouth av
Wm. H. Slacer, 200 Niagara st
C. Maynard Smith, 494 Massachusetts st
Eugene A. Smith, 66 High st
Edward T. Smith, 189 14th st
Louis G. Smith, 300 Elk st
James S. Smith, 66 High st
Irving M. Snow, 371 Porter av
Frederick H. Stanbro, Springville
Elmer Starr, 174 Franklin st
Edw. T. Stevens, 440 Massachusetts st
T. Selden Stewart, 158 15th st
Charles G. Stockton, 436 Franklin st
Edward Storck, 220 Eagle st
Eugene E. Storck, 510 William st
Brayton N. Strong, Boston
O. C. Strong, Colden
Ransford C. Taber, Tonawanda
Fridolin Thoma, 1072 Lovejoy st
Otto Thoma, 1014 Genesee st
John C. Thompson, 55 Amherst st
Justin G. Thompson, Angola
Wm. H. Thornton, 570 Niagara st
Emil S. Tobie, 41 E. Mohawk st
H. S. Townsend, 1177 Seneca st
Hiram P. Trull, Williamsville
E. H. Tweedy, 394 Vermont st
John J. Twohey, 167 E. Utica st
Frank P. Vandenbergh, 32 Lewis Block
P. W. Van Peyma, 445 William st
W. Van Peyma, 940 Broadway
Frank B. Voght, 592 Sycamore st
Charles A. Wall, 306 Hudson st
John J. Walsh, 480 Ellicott st
Walden M. Ward, North Collins
Samuel H. Warren, 30 W. Genesee st
F. L. Watkins, 13 William st
Ernest Wende, 174 Franklin st
Julius Wenz, Lancaster
Geo. H. Westinghouse, 313 Fargo av
Samuel W. Wetmore, 149 Franklin st
Mrs. Samuel W. Wetmore, 149 Franklin st
Charles H. Wetzel, 582 Genesee st
Isaac G. Wheeler, 191 Eagle st

Electa B. Whipple, 491 Porter av
John E. Whitmore, 1099 Genesee st
Matthew Willoughby, 39 Franklin st
Albert B. Wilson, 218 Virginia st
James P. Wilson, 867 Niagara st
Wenceslaus Wolf, 488 Fillmore av
Cardinal T. Wolsey, 12 S. Division st
Wm. H. Woodbury, 258 Franklin st
Charles H. Woodward, 865 Niagara st
Cornelius C. Wyckoff, 482 Delaware av
George W. York, 190 Franklin st
Edson H. Young, 444 Elk st

Number of Members, 276.

Deceased: John D. Hill; Frank H. Potter, July 16, 1891, æt. 31.

MEDICAL SOCIETY OF THE COUNTY OF ESSEX.

ANNUAL MEETING.—Second Tuesday in June.

Officers.

Allen C. Grover, *President.* L. G. Barton, *Vice-President.*
F. T. Delano, *Secretary.* W. T. Sherman, *Treasurer.*

Censors: W. E. Pattison, Robert T. Saville, Charles T. Walton.

Delegate to State Medical Society: Chas. B. Warner.

Members.

Lyman Barton, Willsborough
Lyman G. Barton, Willsborough
Jesse Braman, Wadhams Mills
Benjamin W. Burland, Schenectady
Francis J. D'Avignon, Ausable Forks
Frank T. Delano, Westport
E. J. Dunn, Schroon Lake
Allen C. Grover, Port Henry
Safford E. Hale, Elizabethtown
Edwin S. Howe, Ausable Forks
John A. Henry, Mineville
Wm. W. Knowlton, Mineville
Martin J. LaBell, Lewis
Chas. S. McLaughlin, Ticonderoga
J. G. Marron, Port Henry
Albinus J. Merrill, Upper Jay
Joseph B. Murray, Crown Point
Dudley Palmer, Schroon
W. E. Pattison, Westport
Hannibal W. Rand, Keene
Robert T. Saville, Mineville
Conant Sawyer, Auburn
Wm. T. Sherman, Crown Point Centre
Edward T. Strong, Elizabethtown
Melvin H. Turner, Hammondville
Chas. T. Walton, Port Henry
Chas. B. Warner, Port Henry
Joseph Warner, Crown Point
Rollin C. Wilcox, Ticonderoga

Number of Members, 29.

Deceased: Abiathar Pollard, of Port Henry, April, 1892, æt. 91; George E. Whipple, January 1, 1892.

MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN.

(Organized in 1814; reorganized in 1848.)

MEETINGS.—Annual, first Tuesday in January; semi-annual, first Tuesday in June; quarterly, first Tuesday in September.

Officers. (January, 1892.)

Blake Bigelow, *President.* J. A. Grant, *Vice-President.*
Robert J. Wilding, *Secretary and Treasurer.*

Censors: Theodore Gay, Robert J. Wilding, W. A. Atwater.

Delegate to State Medical Society: C. E. Pearl.

Members.

W. A. Atwater, St. Regis Falls
Sidney P. Bates, Malone
J. O. A. Beaupré, Malone
Blake Bigelow, Malone
John H. Cameron, Malone
Carter Crippen, Trout River
Henry Furness, Malone
Theodore Gay, Malone
Wm. Gillis, Fort Covington
J. A. Grant, Malone
F. F. Gray, Malone
Watson H. Harwood, Chasm Falls
L. E. Hawkins, Brushton
George Howe, Chateaugay
J. A. Johnson, Chateaugay
J. R. Johnson, Bangor
E. La Rocque, Malone
C. McConnell, Hogansburgh
James Macfie, Fort Covington
George H. Oliver, Dickinson Centre
C. E. Pearl, North Bangor
H. S. Rockwood, Bombay
E. A. Rust, Moira
Calvin Skinner, Malone
J. A. Smart, Fort Covington
C. B. Smith, West Bangor
Charles E. Stickney, Constable
A. R. Taylor, Malone
E. E. Thurber, Brainardville
J. S. Van Vechten, Chateaugay
L. M. Wardner, St. Regis Falls
F. D. Whitehead, Chateaugay
A. G. Wilding, Malone
Robert J. Wilding, Malone

Number of Members, 34.

Deceased: George L. Jordan, of Burke; Ira A. Darling, of West Bangor, October 4, 1891.

MEDICAL SOCIETY OF THE COUNTY OF FULTON.

MEETINGS.—Annual, second Thursday in January; semi-annual, second Thursday in June.

Officers. (January, 1892.)

Isaac De Zouche, *President.* J. W. Joslin, *Vice-President.*
A. L. Johnson, *Secretary.* H. K. Thorne, *Treasurer.*

Censors: Eugene Beach, David V. Still, M. H. Cullinge.

Committee on Hygiene: P. R. Furbeck, I. DeZouche. J. E. Burdick.

Delegate to State Medical Society: John Edwards.

Members.

D. N. Barker, Northville
Eugene Beach, Gloversville
Frank Beebe, Johnstown
J. F. Blake, Northville
John E. Burdick, Johnstown
E. H. Coon, Mayfield
Mary H. Cullinge, Gloversville
Wm. Davis, Gloversville
Isaac DeZouche, Gloversville
M. F. Drury, Broadalbin
John Edwards, Gloversville
H. C. Finch, Broadalbin
Peter R. Furbeck, Gloversville
J. A. Hagar, Gloversville
A. L. Johnson, Gloversville
W. L. Johnson, Johnstown
J. W. Joslin, ——
C. M. Lefler, Gloversville
Jehiel Lefler, Johnstown
Darius S. Orton, Northampton
R. Palmer, Gloversville
J. S. Phillips, Gloversville
F. W. Shaffer, Gloversville
C. F. Sherman, Gloversville
T. D. Smith, Broadalbin
C. A. Sternberg, Gloversville
David V. Still, Johnstown
J. K. Thorne, Gloversville
W. C. Wood, Gloversville
James K. Young, Johnstown

Number of Members, 30.

MEDICAL SOCIETY OF THE COUNTY OF GENESEE.

(Organized about 1811.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in January, at Batavia.

(This County Society has not communicated with the State Society since 1884.)

Members.

S. Barrett, Le Roy
S. C. Bateman, Alabama
W. T. Bolton, Batavia
J. F. Cleveland, Le Roy
F. W. Crane, Corfu
G. W. Croff, Bethany
O. R. Croff, Bethany
A. G. Ellenwood, Attica, Wyom'g Co.
B. A. Fuller, Le Roy
G. B. Gilbert, Byron
A. P. Jackson, Oakfield
J. M. Lewis, Elba
H. A. Morse, Batavia
I. T. Mullen, Stafford
I. V. Mullen, Alexander
John H. Mullen, Alexander
Wm. Pardee, Oakfield
L. B. Parmalee, Batavia
C. F. Rand, Batavia
A. D. Smith, East Pembroke
E. C. Smith, Corfu
M. W. Townsend, Bergen
L. L. Tozier, Batavia
I. W. Warner, Elba
R. Williams, Le Roy
A. F. G. Zurhorst, Alabama

Number of Members, 26.

MEDICAL SOCIETY OF THE COUNTY OF GREENE.

(Organized July, 1806; reorganized October 13, 1855.)

MEETINGS.—Annual, second Tuesday in May; semi-annual, second Tuesday in October; quarterly, second Tuesday in July and January.

Officers. (May, 1892.)

E. E. Elliott, *President.*
George Haner, *Secretary.*
Robert Selden, *Vice-President.*
C. E. Willard, *Treasurer.*

Censors: Brayton A. Johnson, Ambrose Beach, E. H. Merriman, I. T. Sutton, W. B. Shaw.

Committee on Hygiene: L. Safford, F. S. Deyoe, D. Gilleland.

Delegate to State Medical Society: Henry J. Griffin.

Members.

Ambrose Beach, Coxsackie
Charles H. Chubb, Palenville
F. S. Deyoe, Hunter
E. E. Elliott, Catskill
Dugrand D. Erway, Leeds
Nelson Fanning, Catskill
D. Gilleland, Oak Hill
Henry J. Griffin, Cairo
George Haner, Tannersville
Wm. B. Heustis, Kiskatom
S. A. Holcomb, Palenville
Brayton A. Johnson, Ashland
W. F. Lamont, Catskill
Bradley S. McCabe, Greenville
Charles P. McCabe, Greenville
Wm. P. McLaury, Catskill
Wm. H. Mead, Windham
E. H. Merriam, Coxsackie
George H. Noble, Cairo
John D. Robinson, Prattsville
L. Safford, East Durham
Samuel T. Searles, New Baltimore
O. G. Selden, Catskill
Robert Selden, Catskill
W. B. Shaw, New Baltimore
P. J. Stanley, Windham
I. T. Sutton, Prattsville
I. J. Van Hoesen, Medway
A. W. Van Slyke, Coxsackie
F. A. Wheeler, Athens
Charles E. Willard, Catskill

Number of Members, 31.

Deceased: C. V. Barnett, of Coxsackie, died November 11, 1891, æt. 73; F. S. Greene, of Coxsackie, died September 30, 1891.

HAMILTON COUNTY.

(Has no Medical Society.)

MEDICAL SOCIETY OF THE COUNTY OF HERKIMER.

(Organized August 5, 1808.)

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in December; quarterly, first Tuesday in March and September.

Officers. (June, 1892.)

K. A. Bushnell, *President.* Wm. H. Dudley, *Vice-President.*
A. Walter Suiter, *Secretary.* George Graves, *Treasurer.*
E. H. Douglass, *Librarian.*

Censors: M. A. Southworth, Eli Fox, D. M. Devendorf,
S. S. Richards, I. O. Nellis.

Committee on Hygiene: C. W. Hamlin, K. A. Bushnell, E. M. Draper,
S. S. Richards, A. Walter Suiter.

Committee on Microscopy: A. Walter Suiter, C. W. Hamlin,
W. D. Garlock.

Delegate to State Medical Society: George Graves.

Members.

George A. Armstrong, West Winfield
F. M. Barney, Dolgeville
M. W. Brown, Cedarville
Wm. Brown, Cedarville
W. W. Budlong, Frankfort
K. A. Bushnell, Little Falls
J. E. Casey, Mohawk
H. J. Christman, Columbia
Fred. F. Comstock, Ilion
D. M. Devendorf, Herkimer
Lyman C. Dexter, Newport
A. J. Douglass, Ilion
A. O. Douglass, Little Falls
Edgar H. Douglass, Little Falls
E. M. Draper, Ilion
Wm. H. Dudley, Newport
F. E. Easton, Van Hornesville
I. S. Edsall, Middleville
John B. Ellis, Little Falls
George Graves, Herkimer
Wm. D. Garlock, Little Falls
Chas. H. Glidden, Little Falls
H. H. Greene, Paine's Hollow
C. W. Hamlin, Middleville
J. T. Hard, Little Falls
Wm. H. Harter, Herkimer
Wm. E. Hayes, Frankfort
J. B. Holcomb, Newport
Stephen A. Ingham, Little Falls
Cyrus Kay, Jr., Herkimer
G. N. Lehr, Frankfort
Miles Longshore, Cold Brook
Adam Miller, Jordanville
W. B. Miller, Salisbury Center
S. R. Millington, Poland
A. A. Moors, West Winfield
Irving O. Nellis, Herkimer
C. W. Nichols, Fairfield
B. Onuf, Dolgeville
Wm. H. H. Parkhurst, Frankfort
Vaughn C. Potter, Starkville
Peter Pryne, Herkimer
George P. Rasbach, Mohawk
James I. Rasbach, Ilion
S. S. Richards, Frankfort
James M. Rose, West Winfield
John P. Sharer, Little Falls
P. A. Skiff, Frankfort
Malek A. Southworth, Little Falls
John H. Stephens, West Winfield
A. Walter Suiter, Herkimer
Edgar C. Swift, Jordanville
William Tibbitts, Newville
D. P. VanCourt, Mohawk
Robert W. Warner, Ilion
Wm. B. Woodhull, Poland
John D. Young, Starkville

Number of members, 57.

MEDICAL SOCIETY OF THE COUNTY OF JEFFERSON.

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in July; quarterly, second Tuesday in April and October.

Officers. (June, 1891.)

E. A. Chapman, *President.* D. C. Rodenhurst, *Vice-President.*
H. H. Smith, *Secretary.* C. M. Rexford, *Treasurer.*

Censors: L. G. Gifford, P. H. Johnson, M. L. Smith, G. M. McCombs, G. G. Sabin.

Business Committee: J. D. Spencer, G. M. McCombs, H. H. Smith.

Legal Committee: C. G. Stevens, G. M. McCombs, D. C. Rodenhurst.

Delegates to State Medical Society: G. M. McCombs, C. M. Rexford.

Members.

I. H. Abell, Antwerp
F. C. Bailey, Adams Center
W. C. Bailey, Adams Center
H. D. Bingle, Carthage
G. A. R. Blake, Watertown
A. J. Boyd, Sackett's Harbor
E. A. Chapman, Belleville
B. C. Cheeseman, Depauville
Robert Clink, Redwood
J. M. Crawe, Watertown
J. M. Crawe, Jr., Watertown
F. T. Dale, Lafargeville
H. H. Deane, Watertown
C. S. Drury, Natural Bridge
O. C. Eastman, Watertown
E. E. Eddy, Redwood
W. A. Forrester, Watertown
S. W. Frame, Belleville
A. A. Getman, Chaumont
L. G. Gifford, Rodman
J. C. Graham, Philadelphia
M. J. Hutchins, Redwood
H. W. Jewett, Chaumont
Edward F. Johnson, Champion
P. H. Johnson, Adams
C. L. Jones, Lafargeville
L. E. Jones, Evans' Mills
James E. Kelsey, Theresa
H. A. McIllmoyl, Clayton
George M. McCombs, Clayton
E. K. McCreary, ——
E. R. McCreary, Watertown
Mrs. Lois Mansfield, Watertown
L. Mason, Evans' Mills
F. W. H. Massey, Brownville
Charles Parker, Three Mile Bay
Kate Parker, Watertown
John Pierce, Adams
C. M. Rexford, Watertown
DeWitt C. Rodenhurst, Philadelphia
George G. Sabin, Black River
W. H. H. Sias, Ellis Village
E. Sill, Watertown
F. B. Smith, Watertown
H. H. Smith, Watertown
J. Monroe Smith, Watertown
M. L. Smith, Watertown
H. L. Smith, Rodman
Gordon P. Spencer, Watertown
H. G. P. Spencer, Watertown
James D. Spencer, Watertown
A. B. Stevens, Watertown
C. G. Stevens, Watertown
J. R. Sturtevant, Theresa
George E. Sylvester, Black River
W. G. Terry, Henderson
A. S. Thompson, Ellis Village
E. W. Trowbridge, Watertown
W. A. Vincent, Three Mile Bay
E. E. Ward, Pamelia Four Corners
Lewis C. Watson, Alexandria
J. A. Wood, Plessis
G. H. Wood, Antwerp

Number of members, 63.

Deceased: A. S. Low, Watertown; Allen S. Smith, Watertown.

MEDICAL SOCIETY OF THE COUNTY OF KINGS.

MEETINGS.—Annual, third Tuesday in January; stated meetings, third Tuesday of other months; all meetings are held in Brooklyn, at 356 Bridge Street, the permanent home of the Society. A "Journal and Reading Room" is open daily (except Sundays) from 10 A.M. to 10 P.M.; over two hundred journals are regularly on file. The library has recently been improved by the addition of several valuable works of reference, and the best of the new medical monographs and text-books, and now contains more than

4000 books and pamphlets. This Society also owns and publishes monthly *The Brooklyn Medical Journal*, which has now about 2000 subscribers

Officers. (January, 1892.)

Z. Taylor Emery, *President.* John C. Shaw, *Vice-President.*
W. M. Hutchinson, *Secretary.* David Myerle, *Assistant Secretary.*
Chas. N. Cox, *Treasurer.* Wm. Browning, *Librarian.*

Censors: Arnold Stub, G. R. Butler, Herman Bender, George E. Law, Joel W. Hyde.

Trustees: A. Ross Matheson, William Wallace, Frank F. West, Walter B. Chace, A. J. C. Skene.

Delegates to State Medical Society (1892–1895).

A. J. C. Skene. Wm. Browning, G. R. Butler,
John A. McCorkle, H. L. Bartlett, Joel W. Hyde,
G. McNaughton, H. B. De La Tour, W. H. B. Pratt,
John C. McEvitt, J. L. Kortright, Ernest Palmer.

Members.

(Where the name of town is not given Brooklyn is to be understood.)

H. A. Alderton, 175 Remsen st
Belle V. Aldridge, 58 Ft. Greene pl
L. A. W. Alleman, 64 Montague st
Martin Amador, 99 N. Oxford st
S. F. Anderson, 672 Degraw st
W. Applegate, Flatbush
H. L. Armstrong, 135 Clinton st
John A. Arnold, K. C. Hospital, Flatbush
H. Arrowsmith, 28 Schermerhorn st
J. G. Atkinson, 257 Adelphi st
Benjamin Ayres, 213 Jefferson av
H. Messenger Ayres, 91 Lafayette av
E. H. Babcock, 144 Lawrence st
Frank Baldwin, 138 Sumner av
Lemuel G. Baldwin, 164 Clinton st
Lester C. Baldwin, 1153 Gates ave
Frederick D. Bailey, 333 Hancock st
C. F. Barber, 36 Lafayette av
I. H. Barber, 36 Lafayette av
G. D. Barney, 101 Hancock st
H. L. Bartlett, Flatbush
E. H. Bartley, 21 Lafayette av
George R. Barns, 152 Hall st
W. H. Bates, 115 Schermerhorn st
H. B. Baylies, 442 9th st
C. D. Beasley, 460 Marcy av
Charles P. Becker, Hale av., near Atlantic
W. N. Belcher, 25 S. Portland av
Harry Kent Bell, 113 Second pl
L. T. Bell, 595 Marcy av
Charles N. Bellows, 442 Nostrand av
Herman Bender, Bushwick and Willoughby aves
W. H. Bennett, 188 6th av
E. F. Berkele, 610 Willoughby st
P. H. Berlenbach, 16 Suydam st
E. C. Bernaner, 253 Stockton st
James R. Bird, 122 Putnam av
B. F. M. Blake, 115 Lee av
J. A. Blake, 194 Putnam av
H. D. Bliss, 23 Halsey st
W. A. Bliss, 218 11th st
D. G. Bodkin, 259 De Kalb av
J. B. Bogart, 57 Putnam av
Seth D. Boggs, 341 Tompkins av
Benj. E. Bostwick, 24 Clinton st
F. E. Boyden, 622 Marcy av
Wm. C. Braislin, 109 Gates av
Washington J. Brandt, 405 Union st
R. C. Brewster, 134 Lafayette av
Benj. M. Briggs, 106 Willoughby st
A. T. Bristow, 234 Clinton st
Anna M. Brown, 982 Bedford av
Wm. Browning, 54 Lefferts pl
Wm. W. Browning, 155 Reid av
A. H. Brundage, 71 Palmetto st
C. W. Brunner, 623 Wyeth av
Arthur C. Brush, 177 Gates av
George W. Brush, 2 Spencer pl
Emilie Bucchaca, 233 Reid av
Thomas M. Buckley, 37 Hicks st
Henry Bullwinkel, 433 Franklin ave
E. S. Bunker, 178 St. John pl
J. H. H. Burge, 133 Montague st
P. V. Burnett, 274 Driggs st
Benj. Burroughs, 443 Franklin av
Glentworth R. Butler, 229 Gates av
Wm. E. Butler, Brooklyn Hospital

John Byrne, 314 Clinton st
S. J. Byrne, 56 7th av
H. De Haven Cameron, M. E. Hospital
P. Candidus, 229 S. 9th st, E. D.
A. F. Carroll, 97 Park av
W. R. A. Carley, 882 Quincy st
James L. Carney, 44 4th av
E. J. Carolan, 946 Bedford av
Samuel R. Casey, 542a Hancock st
Arnold W. Catlin, 207 Greene av
George Chaffee, 201 47th st
Walter B. Chase, 645 Marcy av
S. B. Childs, 498 Classon av
S. Church, 236 Clinton st
Frank H. Clark, 627 Marcy av
Joseph E. Clark, 184 Clinton st
Stanley G. Clarke, 132 Reid av
Wm. H. Clominzer, 416 Monroe st
Alex. Cochran, 127 7th av
H. L. Cochran, 141 Clinton st
J. A. Cochran, 127 7th av
Laurence Coffin, 516 Bedford av
F. H. Colton, 136 Montague st
Henry Conkling, 143 Remsen st
J. T. Conkling, 143 Remsen st
C. D. Cook, 133 Pacific st
W. J. Corcoran, 301 Clinton st
Charles Corey, 23 S. Oxford st
Jamas L. Cornell, 33 Monroe pl
A. L. Coville, 154 Berkeley pl
J. H. Coverly, 191 Washington Park
Charles N. Cox, 489 Greene ave
Louis F. Criado, 147 Ft. Greene pl
E. P. Crowell, 69 Decatur st
Wm. P. Cruikshank, 5 Lafayette av
Albert M. Curry, 493 Classon av
G. W. Cushing, 221 Schermerhorn st
H. P. Dawe, 819a Greene av
E. A. Day, 306 Sumner av
H. B. De La Tour, 867 Union st
C. E. De La Vergne, 40 Schermerhorn st
W. A. De Long, 285 S. 2d st, E. D.
F. C. De Mund, New Utrecht
R. L. Dickinson, 145 Clinton st
E. J. Dirkes, 540 Madison st
Thomas Dixon, 74 Sands st
George Dominguez, 97 Second pl
Charles E. Dority, 411 Union st
A. J. Dower, 380 Clinton st
J. H. Droge, 8 Stuyvesant av
G. Drury, 115 Johnson st
Wm. F. Dudley, 303 Henry st
Z. T. Dunning, Arlington av and Cleveland st
Jessie T. Duryea, 160 Livingston st
Louis M. Dussedorf, 251 Hoyt st
R. G. Eccles, 191 Dean st
Benj. Edson, 83 St. Marks av
Edgar Eltinge, 2 Verona pl
Oscar Embden, 123 Schermerhorn st
Z. T. Emery, 440 Washington av
George Evans, 909 Bedford av
H. A. Fairbairn, 213 McDonough st
P. H. Fairchild, 155 Hancock st
J. N. Farrar, 1271 Broadway, N. Y.
Mary A. Wattles Faunce, 259 Adelphi st
Herbert Fearn, 196 Clermont av
George N. Ferris, Flatbush av, Flatbush
B. F. Fessenden, 380 Adelphi st
M. Figuera, 12 Stuyvesant av
James C. Fitzsimmons, 455 Gold st
J. W. Flemming, 379 Bedford av
L. M. Fleming, 324 Adams st
Walter S. Fleming, Kings Co. Insane Asylum
Thomas L. Fogarty, 167 Union st
G. Ryerson Fowler, 302 Washington ave
——— Fowler, 408 10th st
Wm. A. Frees, 1138 3d av
T. R. French, 469 Clinton av
T. Frickenstein, 110 Union ave, E. D.
Walter M. Friend, 2 First pl
J. Fuhs, 209 Hewes st
Frances V. C. Fuller, 110 St. James place
S. E. Fuller, 77 Hansom pl
W. F. Gardiner, 175 6th av
H. S. Gilbert, 311 Cumberland st
Wm. Gilfillan, 98 Remsen st
Wm. J. Gilfillan, 79 Main st
F. B. Gillette, 195 Colver st, E. D.
Thos. C. Giroux, 142 S. 4th st, E. D.
J. J. Gleavy, 295 9th st
Salvador Gomez, 359 9th av
O. A. Gordon, 166 Tompkins av
Edward Grether, 184 Meserole st, E. D.
J. M. Griffin, 1292 Bushwick av
G. P. Griffing, 597 Lorimer st, E. D.
Wm. A. Griffith, 669 Willoughby av
S. C. Griggs, 143 Lefferts pl
H. L. Grover, 881 Quincy st
C. E. Gunther, 151 Clinton st
Gordon R. Hall, 26 Schermerhorn st
Lucy M. Hall, 181 Joralemon st
A. C. Hallan, 524 Bedford av, E. D.
Henry T. Halleck, 328 Jay st
J. C. Halsey, 156 Reid av
A. M. Hamilton, 726 De Kalb av
J. M. Harcourt, 305 Clinton st
J. Harrigan, 401 Clinton st
E. A. Hatch, 201 Hart st
Audley Hazlett, 115 Clinton st

T. B. Hegeman, 485 Halsey st
C. C. Henry, 56 Clark st
J. Williams Henry, 222 Macon st
Wm. B. Hewett, 80 St. Marks av
E. P. Hickok, 114 Pennsylvania av
J. O. F. Hill, Coney Island
C. N. Hoagland, 410 Clinton av
G. D. Holsten, 340 Lafayette av
E. S. Holt, 422 Clermont av
D. C. Holton, 601 Leonard st
H. N. Hoopie, 35 Kingston av
George G. Hopkins, 350 Washington av
E. H. Hoxsie, 1 Hart st
Frank P. Hudnut, 487 Clinton av
H. M. Hufnagel, 208 Park av
J. H. Hunt, Bedford ave, corner of Quincy
Alexander Hutchins, 796 De Kalb av
W. M. Hutchinson, 207 Clinton st
Belcher Hyde, 282 McDonough st
Joel W. Hyde, 215 Schermerhorn st
J. W. Ingall, 131 Lewis av
L. Barstow Irish, 276 9th st
C. P. James, 413 State st
Reuben Jeffry, 87 S. 9th st, E. D.
J. A. Jenkins, 150 Milton st, E. D.
W. E. Jenner, 429 Henry st
Charles Jewett, 307 Gates av
F. A. Jewett, 882 Hancock st
Oswald Joerg, 12 Schermerhorn st
C. H. Johnson, 221 Greene av
J. G. Johnson, 153 Joralemon st
Charles H. Jones, 494 3d av
C. N. D. Jones, 163 De Kalb av
T. U. Joyce, 745 Union st
Thomas A. Joyce, 166 Clinton st
J. A. Kene, 169 Willoughby st
J. C. Kennedy, 672 Willoughby av
E. J. Kenny, 468 Vanderbilt av
J. R. Kevin, 968 Bedford av
F. P. Keys, 77 Hanson pl
James J. Keyes, 236 17th st
P. E. Kidd, 173 Willoughby st
J. S. King, 823 De Kalb av
E. H. Knight, Washington av, cor. Willoughby
W. F. Koerner, 831 Driggs st
J. L. Kortright, 852 Rodney st
Wm. H. Kretzschmar, cor. Fulton and Miller aves, E. N. Y.
George R. Kuhn, 122 Clinton av
J. F. Kuhn, 168 Jay st
L. DeB. Kuhn, 471 Willoughby av
J. J. Lamadrid, 412 Greene av
W. B. Lane, 367 Greene av
George E. Law, 114 Pennsylvania av
A. W. Lawrence, 203 Bedford av
Richmond Lennox, 146 Pierrepont st
A. S. Leonard, 131 McDonough st
Francis I. Leonard, 34 Brooklyn av
J. C. Lester, 406 Clinton st
E. A. Lewis, 102 Pierrepont st
W. A. Little, 923 Bedford av
Frank Little, 114 Montague st
Jos. A. Livingston, 192 Wyona st
T. M. Lloyd, 125 Pierrepont st
J. Barney Low, 221 53d st
H. Lowenstein, 223 Bushwick av
D. F. Lucas, 552 Pacific st
Wm. Maddren, 1 Hanson pl
C. S. Mann, 480 Greene av
Francis Mansfield, 140 Berkeley pl
D. M. Marquette, 176 St. Johns pl
J. H. Marshall, 536 Monroe st
L. D. Mason, 171 Joralemon st.
A. Ross Matheson, 337 Union st
Nath. Matson, 415 Greene av
W. B. Matson, 115 Greene av
H. C. Matthews, 894 Quincy st
Arthur Matthewson, 139 Montague st
J. B. Mattison, 185 Brooklyn av
L. A. McClelland, 167 Hull st
S. A. McCorkle, 149 Clinton st
H. C. McLean, 479 Pacific st
Geo. McNaughton, 227 Greene av
L. C. McPhail, 127 Pierrepont st
R. M. Mead, 302 Union st
L. E. Meeker, 956 Gates av
Jno. Merritt, 842 President st
Joseph Merzback, 144 Wyckoff st
J. A. Meara, 4 Lafayette av
F. H. Miller, 39 Pennsylvania av
Franklin P. Miller, 282 Stuyvesant av
W. F. Millington, 326a 9th st
E. J. Chapin Minard, 243 Quincy st
Wm. Monterer, 46 Stagg st
J. F. Moore, 444 Pacific st
Robt. J. Morrison, St. Mary's Hospital
Henry H. Morton, 266 Clinton st
W. A. Morton, 324 Gold st
J. M. Moser, 158 Ross st
Eliza M. Mosher, 181 Joralemon st
David Myerle, 570 Bedford av
Fred. M. Nehrbas, 1377 Myrtle av
W. Neuss, 248 Central av
W. A. Newman, 135 Madison st
Hayden Nicholas, 289 Baltic st
N. L. North, Jr., 118 Hooper st. E. D.
N. L. North, Sr., 627 Bedford av
T. H. Northridge, 320 Cumberland st
W. A. Northridge, 366 Schermerhorn st
Henry Noss, 328 Jay st
Walter O'Brien, 165 Baltic st

J. F. O'Connell, 159 Remsen st
J. O'Grady, 130 Sands st
Chas. A. Olcott, 572 Bedford av
Cornelius Olcott, 572 Bedford av E. D.
L. H. Olmstead, 404 Clinton st
Robt. Ormiston, 117 S. Elliott pl
J. W. Ostrander, 95 Clark st
G. B. O'Sullivan, 126 William st
Geo. A. Ostrander, 61 Greene av
Andrew Otterson, 97 6th av
Wm. C. Otterson, 144 Pierrepont st
May R. Owen, 363 Bedford av
E. D. Page, 167 Adelphi st
Edward Parks, 38a Kossuth pl
M. E. Parrott, 379 Jefferson st
Geo. H. Parshall, 173 53d st
John J. Paulson, 335 15th st
A. R. Payne, 99 Lafayette av
John M. Peacock, 247 Madison st
Chas. P. Peterman, 826 Lafayette av
L. W. Pierson, 45 Third pl
L. S. Pilcher, 145 Gates av
J. O. Polak, L. I. Col. Hospital
Ralph H. Pomeroy, 106 Berkeley pl
H. F. Praeger, 703 Bushwick av
W. H. B. Pratt, 94 6th av
S. R. Pray, 525 Bedford av
P. J. Prendergast, 531 Henry st
Henry R. Price, 485 Franklin av
J. S. Prout, 26 Schermerhorn st
J. R. Quinn, 449 Lafayette av
H. W. Rand, 147 Clinton st
W. H. Randolph, 179 Herkimer st
John Rankin, 302 Sumner st
Alex. Rae, 117 Henry st
J. C. Rappold, 750 Flushing av, E. D.
J. C. Rappold, Jr., 750 Flushing av
John A. Ray, 45 Jefferson av
Jos. M. Raub, 295 Clinton st
J. H. Raymond, 173 Joralemon, st
Henry N. Read, 339 Clinton st
Henry B. Reed, 12 Verona pl
Wm. W. Reese, 175 Hicks st
John Rendell, 91 Penn st
Edwin Reynolds, 140 Lafayette av
J. F. Richardson, 125 S. Oxford st
Wilbur L. Rickard, 45 Halsey st
H. F. W. Risch, 208 17th st
O. E. F. Risch, 208 17th st
A. H. Ritter, 262 Hewes st
Jas. A. Roache, 970 Bedford av
Victoria Robinson, 777a Union st
J. W. E. Roby, 484 Bedford av
H. C. Rogers, 377 Gates av
Alex. J. Rooney, 226 17th st
F. H. Ross, 128 Sands st
J. H. E. Saud, 703 4th av
S. Santoire, 148 Clinton av
C. T. Sauer, 433 10th st
J. G. Sauer, 1039 3d av
Adam Schauf, 198 Vernon av
H. L. Schelling, 841 Willoughby av
P. L. Schenck, 60 St. Mark's av
Tunis Schenck, 18th av, New Utrecht
Wm. C. Schirmer, 366 Grant st
C. B. Schlatter, 153 17th st
F. A. Schlitz, 811 Willoughby av
G. Schmetzer, 734 Flushing av
J. C. Schnapps, 486 Bedford av, E. D.
Wm. Schroeder, 339 President st
Peter Scott, 128 Reid av
R. Scrimgeour, 408 10th st
Frank W. Shaw, 337 Greene av
J. C. Shaw, 2 Sidney pl
C. W. Sheldon, The Alhambra, cor Nostrand av and Halsey st
A. W. Shepard, 126 Willoughby st
C. H. Shepard, 81 Columbia Heights
Jno. E. Sheppard, 175 Remsen st
W. Sherman, 336 9th st
Samuel Sherwell, 33 Schermerhorn st
Fred. J. Shoop, 80 Hanson pl
A. J. C. Skene, 167 Clinton st
Wm. H. Skene, 167 Clinton st
Richard Slee, 94 Decatur st
H. M. Sloat, 149 Van Buren st
Jos. E. Smith, 91 Lee av, E. D.
J. Wheeler Smith, 1208 Herkimer st
Arthur E. Smylie, 124 Penn st
Agnes Sparks, 18 Hanson pl
Wm. E. Spencer, 293 DeKalb av
Fleet S. Spier, 162 Montague st
Carl H. C. Steinke, 220 17th st
J. H. Sterling, 225 Schermerhorn st
W. Steward, 188 State st
E. H. Stone, 178 Jay st
Wm. E. Stratton, 71 7th av
F. H. Stuart, 123 Joralemon st
Arnold Stub, 84 6th av
Purdy H. Sturges, 440 Ninth st
J. D. Sullivan, 74 McDonough st
W. F. Swalm, 118 Lafayette av
Robt. Swan, 74 State st
Jas. Sweeney, 192 N. 6th st, E. D.
C. H. Terry, 540 Washington av
Wm. Henry Thayer, 171 Livingston st
R. P. Thompson, 828 Lafayette av
Palmer Townsend, 535 Greene av
T. W. Topham, 194 Schermerhorn st
G. H. Treadwell, 463 Gates av
H. A. Tucker, Jr., 393 Clinton st
H. C. Turner, 412½ Clinton st.
W. J. Turner, 105 Clinton st
J. Y. Tuthill, 100 Ft. Greene pl

E. P. Thwing, 156 St. Marks av
J. M. Van Cott, Jr., 188 Henry st
J. W. Van Deusen, 901 Bedford av
John Von Glahn, 49 Sands st
R. L. Van Kleck, Gravesend
John Van Ness, 942 Bedford av
G. Wackerhagen, 326 Schermerhorn st
J. F. Wade, 904 Lafayette av
J. D. Wade, 252 S. 9th st, E. D.
Henry Wallace, L. I. C. Hospital
Wm. Wallace, 183 Congress st
J. E. Walsh, 488a 17th st
Jas. P. Warbasse, M. E. Hospital, 7th av and 6th st.
Geo. G. Ward, L. I. C. Hospital
D. W. Waugh, 167 Union st
Frederick Weisbrod, 9 Lewis av
Thos. L. Wells, 883 St. Mark's av
G. W. Welty, 500 Clinton st
B. F. Westbrook, 174 Clinton st
G. R. Westbrook, 175 Schermerhorn st
F. E. West, 29 Schermerhorn st
F. Weygant, 745 Bedford av
D. Rankine White, 380 9th st
Geo. Wiber, 181 S. 5th st, E. D.
Jarvis S. Wight, 30 Schermerhorn st
J. G. Wilbur, 544 Washington av
Thos. Wilde, 121 7th av
H. F. Williams, 363 Grand av
F. E. Wilson, 1242 Bushwick av
J. M. Winfield, 1255 Pacific st
W. I. Wood, 485 Willoughby av
D. Morris Woolley, 310 Sumner av
F. W. Wunderlich, 165 Remsen st
Thos. A. York, L. I. C. Hospital
J. L. Zabriskie, Flatbush
C. Zelhoefer, 175 S. 4th st, E. D.

Number of Members, 437.

Non-resident Members.

L. M. Allen, Canarsie, L. I.
Stanton Allen, 485 Milwaukee st, Milwaukee, Wis.
A. H. Buckmaster, 91 Madison av N. Y.
Arthur E. Burns, 604 I st, Tacoma, Washington
Jas. Downie (residence unknown)
Josephine A. Duprey, 24 Powell st, San Francisco, Cal.
C. R. S. Duncan (residence unknown)
Eliot Gorton, Morris Plains, N. Y.
L. C. Gray, 6 E. 49th st, N. Y.
R. C. Gray, 1157 Chapel st, New Haven, Ct.
H. Hardwick, Williams, Ariz
W. H. Harlin (residence unknown)
Skidmore Hendrickson (residence unknown)
Eugene Hodenpyl, 127 W. 58th st, N. Y.
Jeremiah Koehl, Minnesota
A. H. P. Leuf, Philadelphia, Pa.
Alex. J. McCarthy, Montigo Bay, Jamaica
John L. Macumber, St. Johnsland, L. I.
Gilman Osgood (residence unknown)
Chas. E. Perkins (residence unknown)
H. J. Pomroy (residence unknown)
F. K. Priest (residence unknown)
Anna Forest Rowe. N. V. City
J. J. Shanks, Kings Co Insane Asylum, St. Johnsland.
W. C. Sneden, Roslyn, L. I.
Clarence Thwing, Alaska
Geo. W. Wells, Richmond Hill, L. I.
Henry D. White (residence unknown)

MEDICAL SOCIETY OF THE COUNTY OF LEWIS.

(Organized January 8, 1861.)

MEETINGS.—Annual, fourth Tuesday in June; semi-annual, third Tuesday in December; quarterly, fourth Tuesday in March and September.

Officers. (June, 1891.)

A. A. Joslin, *President.* P. H. Von Zierolshofen, *Vice-President.*
W. O. Hubbard, *Secretary.* W. H. Johnson, *Treasurer.*

Delegate to State Medical Society: W. W. Jamieson.

Members.

R. H. Ash, Port Leyden
H. J. Cornish, Lowville
F. A. Crane, Lowville
A. H. Crosby, Lowville
Charles E. Douglas, Lowville
G. P. English, Boonville

David Faudry, Barnes' Corners
H. S. Hendie, Lowville
W. O. Hubbard, Lowville
James Z. Hunt, Lowville
W. W. Jamieson, New Bremen
W. H. Johnson, Port Leyden
Albert A. Joslin, Martinsburgh
H. F. Kilborn, Croghan
C. P. Kirley, Lowville
C. H. Merriam, Locust Grove
D. L. Murray, Croghan
W. W. Nelson, Constableville
Herbert R. Norton, Port Leyden
Laurantine Rouchelle, Croghan
Sarah E. Simonet, Croghan
O. O. Stowell, Copenhagen
P. H. Von Zierolshofen, Croghan.
Number of Members, 23.

MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON.

Organized June, 1806.)

MEETINGS.—Annual, third Tuesday in May; quarterly, third Tuesday in August, November, and February.

Officers. (June, 1892.)

M. C. Rowland, *President.*
F. B. Dodge, *Secretary.*
M. E. Dickenson, *Vice-President.*
F. H. Moyer, *Treasurer.*

Censors: F. B. Dodge, J. P. Brown, R. W. Green, C. H. Richmond.

Committee on Hygiene: F. B. Dodge.

Delegate to State Medical Society: C. C. Goodrich.

Members.

George H. Bennett, Lima
F. J. Bowen, Tuscarora
John P. Brown, Nunda
A. L. D. Campbell, Mt. Morris
J. W. Craig, Geneseo
J. E. Crisfield, Dansville
John Denton, Moscow
M. E. Dickenson, Dansville
F. B. Dodge, Mt. Morris
Fred. R. Driesbach, Dansville
I. A. M. Dyke, York
J. G. Filkins, York
Clement C. Goodrich, Avon
Robert W. Green, Geneseo
Jacob M. Hagey, Mt. Morris
G. G. Jones, Scottsburg
B. T. Kneeland, Dalton
W. E. Lauderdale, Geneseo
W. E. Lauderdale, Jr., Geneseo
J. H. Losey, Conesus
W. K. McGowan, Conesus
R. J. Menzie, Caledonia
F. H. Moyer, Moscow
William Nesbit, Avon
Charles V. Patchin, Dansville
F. M. Perine, Dansville
C. H. Richmond, Livonia
M. C. Rowland, Geneseo
G. W. Squires, East Avon
Number of Members, 29.

Removed from the County: L. M. Phillips, of Conesus, and W. F. Wallace, of East Avon.

MEDICAL SOCIETY OF THE COUNTY OF MADISON.

MEETINGS.—Annual, second Tuesday in July; semi-annual, in January, at the call of the President.

Officers. (July, 1891.)

W. H. Griffin, *President.*
Wilbur Birdsall, *Secretary.*
A. A. White, *Vice-President.*
I. N. Goff, *Treasurer.*

Censors: Edgar L. Miller, H. T. Carter, J. W. Knapp, A. A. White.

Delegate to State Medical Society: C. B. Wilcox.

Members.

J. B. Allen, New Woodstock
E. P. Bailey, Oneida
F. D. Beebe, Hamilton
M. M. Billington, Chittenango
Gilbert Birdsall, North Brookfield
H. Clift Brown, Brookfield
O. W. Burhyte, Brookfield
H. W. Carpenter, Oneida
D. D. Chase, Morrisville
Amos Cheesbrough, Edmeston, Otsego Co.
Silas S. Clark, De Ruyter
F. E. Dewey, Peterboro
J. R. Eaton, Chittenango
Charles L. Furman, Hamilton
E. H. Galloway, Eaton
I. N. Goff, Cazenovia
Carl D. Green, Poolville
L. P. Greenwood, Erieville
W. H. Griffith, Munnsville
Horace Halbert, Canastota
H. F. Hubbard, Verona, Oneida Co.
Milton B. Jarvis, Canastota
M. R. Joy, Perrysville
J. W Knapp, Canastota
Othello Langworthy, ——
Edgar L. Miller Eaton
H. P. Mead, Morrisville
S. P. Moore, Munsville
George B. Munger, Canastota
A. R. Nicholson, Madison
C. H. Perry, Oneida
Charles H. Ransom, Erieville
A. D. Smith, New Woodstock
William Taylor, Canastota
Amelia Tompkins, Hamilton
H. D. Ure, Wampsville
L. A. Van Wagner, Sherburne, Chenango Co.
C. B. Wilcox, Earlville
A. A. White, Cazenovia
H. H. White, Earlville

Number of Members, 40.

MEDICAL SOCIETY OF THE COUNTY OF MONROE.

MEETING.—Annual, last Wednesday in May.

Officers. (May 25, 1892.)

E. W. Milligan, *President.* T. Oliver Tait, *Vice-President.*
Frederic Remington, *Secretary.* Wallace Sibley, *Treasurer.*

Delegates to State Medical Society: Wallace J. Herriman,
E. W. Mulligan, Frederick W. Zimmer.

Members.

(Where no town is mentioned, Rochester is to be understood.)

F. D. Andrews, 71 East av
E. B. Angell, 294 Alexander st
M. E. Artman, 34 N. Fitzhugh st
Azel Backus, 78 Eagle st
Ogden Backus, 67 S. Fitzhugh st.
W. C. Bailey, Clifton
E. P. Ballantine, State Hospital
C. C. Barber, 149 Hudson st
G. L. Beach, 91 South av
H. S. Beahan, 143 West av
James Beahan, 343 West av
W. D. Becker, 56 Meigs st
W. A. Botsford, 98 Alexander st
J. C. Bowen, Klinck near Monroe av
A. N. Braham, Brockport
Chas. A. Briggs, 209 Alexander st
C. M. Briggs, Fairport
W. H. Briggs, 138 E. Main st
Dorse W. Brown, 281 West av
T. A. Brown, Brighton
W. M. Brown, City Hospital
Alice M. Brownell, 177 Troup st
James C. Buckley, 127 E. Main st
J. J. A. Burke, 65 East av
Emily A. Cady, 62 Park av
Chas. McD. Cameron, 106 East av
A. B. Carpenter, Greece
A. M. Carpenter, Greece
P. D. Carpenter, Pittsford
George G. Carroll, 8 Sophia st
A. C. Cartwright, 82 Ambrose st
J. W. Casey, 25 Sophia st.
Morey S. Collier, 1 Boston court
Charles G. Combs, 45 Monroe av
W. L. Conklin, 96 South av
J. A. Cormier, 355 Central av
J. B. Cowles, Fairport
Marion Craig, 228 Lake av
James F. Crowley, 369 State st
D. F. Curtis, 89 South av

A. Dann, 278 E. Main st
C. E. Darrow, 116 East av
S. W. Davison, 142 State st.
C. A. Dewey, 78 S. Fitzhugh st
Sarah R. A. Dolly, 52 East av
Frank F. Dow, 42 South av
J. D. Dunning, Webster
H. S. Durand, 87 S. Fitzhugh st
Edgar H. Earl, 431 Lyell av
Frederick East, 86 Reynolds
R. M. Elliot, State Hospital
W. S. Ely, 78 S. Fitzhugh st
S. L. Elsner, N. St. Paul st
Porter Farley, 312 Mount Hope av
H. M. Fenno, 77 W. Main st.
Jas. H. Finnessy, 31 East av
John W. Flick, Honeoye Falls
Chas. Forbes, 289 West av
G. W. Foster, 62 State st.
George P. French, 234 Adams st
Robert T. French, 266 Monroe av
W. S. Fuller, Fairport
L. T. Gandy, Chili
C. M. Garlock, 342 Monroe av
Frederick Geare, 158 West av
Horace Gee, Lake av
George U. Gleason, 5 Lyell av
George Goler, 54 S. Fitzhugh st
Erlo P. Gray, Culver Park, cor E. av
O. Groves, 17 Central Park
A. R. Gumberts, 48 Chatham st
A. W. Haenckell, 116 Sophia st
G. S. Hall, 116 East av
Eugene F. Hamburg, Genesee st, near Brooks av
F. F. Hamilton, 18 Madison av
Robert T. Hayes, 16 Reynolds st
Sumner Hayward, 84 East av
W. J. Herriman, 161 State st
L. L. F. Hillman, Greece
S. A. Holman, North Parma
B. L. Hovey, 34 N. Fitzhugh st
Edward Howard, Churchville
E. H. Howard, Insane Asylum, Rochester
W. R. Howard, 392 E. Main st
W. J. Howe, Stottsville
H. B. Howell, 778 E. Main st
J. M. Ingersoll, 275 Monroe av
Ira T. Johnson, 138 Fulton av
Frank A. Jones, Charlotte
Jonas Jones, 290 West av
S. C. Jones, 37 N. Fitzhugh st
Wm. B. Jones, 36 Phelps av
J. J. Kempe, 14 Grove st
N. F. Kiefer, 588 N. Clinton st
W. G. Lacy, Scottsville
W. H. Lakeman, 97 Bolivar st
David Little, 162 Plymouth av
S. W. Little, City Hospital
M. L. Lord, 27 Hawthorn st
C. H. Losey, 20 Phelps av
J. M. Magill, Fairport
A. P. Maine, Webster
M. L. Mallory, 69 N. Fitzhugh st
F. W. Maloney, 218 Allen st
F. A. Mandeville, 98 North av
H. J. Mann, Brockport
W. B. Mann, Brockport
D. G. Mason, East Henrietta
M. C. Mason, 226 Lyell av
J. McCauley, 349 Monroe av
J. H. McCort, 104 W. Main st
P. McNamara, Plymouth
H. B. Miner, West Mendon
A. E. Mink, Hamlin
E. M. Moore, 74 S. Fitzhugh st
E. M. Moore, Jr., 74 S. Fitzhugh st
R. M. Moore, 74 S. Fitzhugh st
John F. Mulherin, 329 Plymouth av
E. W. Mulligan, 290 West av
H. R. Nettleton, 270 Lake av
J. B. Nold, 165 North av
T. A. O'Hara, 97 State st
E. S. Olin, 178 Andrews st
John E. Ottway, Charlotte st
Joseph Pease, Hamlin
S. Perry, 103 S. Fitzhugh st
H. C. Phillips, 5 Lyell av
S. A. Pierce, South av
E. B. Potter, Insane Asylum
B. I. Preston, 31 Chestnut st
Edward J. Price, 88 Nassau st
Charles Reitz, Webster
Frederic Remington, 275 West av
C. E. Rider, 53 S. Fitzhugh st
Wheelock Rider, 53 S. Fitzhugh st
P. E. Rivard, 174 E. Main st
A. S. Rockwell, 76 N. Fitzhugh st
J. O. Roe, 28 N. Clinton st
Obadiah Rogers, Brockport
L. W. Rose, 93 Park av
J. L. Roseboom, 628 E. Main st
T. D. Rupert, Mendon
F. H. Sawers, 41 State st
H. Schoonmaker, 19 Glenwood
Q. C. Schuhart, 248 St. Joseph st
Anna H. Searing, 52 East av
H. T. Sedgwick, Lyell av
H. P. Sheldon, 16 State st
J. F. Sherman, 529 North st
W. Sibley, 95 Lake av
Mary J. Slaight, 32 S. Clinton st
W. C. Slayton, Spencerport
N. G. Soble, 7 University av
L. J. Somers, 23 South st
O. T. Stacy, 284 Alexander st
Wm. Stanton, 12 Gorham st

Mary E. Stark, 27 Rowley st
D. Starkey, Chili
C. S. Starr, 95 North av
F. L. Stebbins, City Hospital
Peter Stockschlaeder, 161 South av
E. V. Stoddard, 68 S. Washington st
J. E. Sutton, Scottsville
T. O. Tait, 18 Marietta st
D. C. Throop, 136 North av
Harriet E. Turner, 56 S. Union st
P. G. Udell, Spencerport
J. C. Urquhart, 186 N. Clinton st
George Woldron, 408 Plymouth av
Wm. T. Wallace, 17 Hudson st.
W. W. Ward, 35 East av
John E. Weaver, 201 East av
Wm. H. Webb, 14 Windsor st
J. W. Whitbeck, 299 East av
E. E. Whitcomb, 232 E. Main st
L. A. Wiegel, 54 N. Clinton st
C. W. Wilbor, 466 N. Clinton st
H. T. Williams, 209 East av
W. W. Williams, N. Parma
Benjamin Wilson, 159 Lake av
C. D. Wooden, 129 Frank st
Lettie H. Woodruff, 223 Plymouth av
Charles D. Young, 31 Caledonia av
F. W. Zimmer, 45 Monroe av

Number of Members, 184.

Deceased: Charles Bulkley, Rochester; James W. Craig, Churchville; Wm. B. Hawkins, Rochester; Cassius Preston; Wm. Y. Page, Rochester.

MEDICAL SOCIETY OF THE COUNTY OF MONTGOMERY.

(Organized July, 1806.)

MEETINGS.—Annual, second Wednesday in December; semi-annual, second Wednesday in June; quarterly, second Wednesday in September and March; all at Fonda.

Officers. (June, 1892.)

S. D. Lewis, *President.* H. M. Post, *Vice-President.*
C. W. DeBaun, *Secretary and Treasurer.*

Delegate to State Medical Society: C. F. Timmerman.

Members.

Douglas Ayres, Fort Plain
Edmond F. Bronk, Amsterdam
I. I. Buckbee, Fonda
C. W. DeBaun, Fonda
Wm. H. DeLamater, Minaville
J. R. Fairbanks, Amsterdam
S. H. French, Amsterdam
H. L. Furbeck, St. Johnsville
Ezra Graves, Amsterdam
T. Hyland, Amsterdam
R. G. Johnson, Amsterdam
C. M. Klock, St. Johnsville
John W. Kniskern, Amsterdam
H. M. Leach, Glen
G. G. Lewis, Amsterdam
S. D. Lewis, Amsterdam
Daniel M. McMartin, Amsterdam
Alex Nellis, Jr., Willard, Seneca Co
John Parr, Buell
Wm. J. Peddie, Fultonville
Wm. R. Pierce, Port Jackson
Henry W. Post, Fultonville
A. Putnam, Amsterdam
Wm. H. Robb, Amsterdam
E. E. Rulison, Amsterdam
E. T. Rulison, Amsterdam
F. E. Simons, Canajoharie
J. A. Smeallie, New York City
A. V. H. Smyth, Amsterdam
Augusta A. Steadman, Amsterdam
Charles Stover, Amsterdam
Peter L. Suits, Tribe's Hill
D. M. Taylor, Canajoharie
C. F. Timmermann, Amsterdam
Christian C. Vedder, St. Johnsville
S. A. Wessels, Canajoharie

Number of Members, 36.

Deceased: Thomas Burton, Fultonville, May 5, 1892, æt. 80.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

MEETINGS.—Annual, fourth Monday in October; stated meetings, the fourth Monday in each month, June, July, and August excepted, at the New York Academy of Medicine, 12 West Thirty-first street.

Officers. (1892.)

George Henry Fox, *President.*
C. H. Avery, *Secretary.*
W. E. Bullard, *Assistant Secretary.*
Seneca D. Powell, *1st Vice President.*
Charles L. Dana, *2d Vice President.*
John S. Warren, *Treasurer.*

Censors: Alexander S. Hunter, R. Van Santvoord, Geo. E. Abbott, Landon Carter Gray, S. O. Vander Poel,

Editor: Daniel Lewis.

Committee on Hygiene: Wm. A Ewing, Mary Putnam Jacobi, S. H. Dessau, Geo. H. Bosley, Robert T. Morris.

Committee on Ethics: A. B. Ball, Lawrence Johnson, Frank W. Jackson, Everett Herrick, W. H. Katzenbach.

Committee on Prize Essays: Edward B. Bronson, Samuel Lloyd. Beverley Robinson,

Committee on Auditing: Wm. Stevens, George T. Jackson.

Members.

Robert Abbe, 11 W. 50th st
Frank Abbot, 22 W. 40th st
Frank Abbott, Jr., 49 W. 57th st
George E. Abbott, 19 E. 61st st
S. H. Abkarian, 32 W. 32d st
Onofrio Abruzzo, 95 Park st
Calvin Thayer Adams, 200 W. 55th st
Lucius C. Adamson, Ward's Island
Isaac Adler, 12 E. 60th st
David H. Agan, 363 Broome st
J. Francis Aitken, 220 E. 35th st
John S. Aitkin, 359 W. 30th st
Welcome T. Alexander, St. Nicholas av and W. 157th st
Charles Lewis Allen, 19 E. 61st st
Charles Slover Allen, 21 E. 28th st
Charles W. Allen, 696 Madison av
John E. Allen, 110 E. 46th st
Thomas H. Allen, 52 W. 45th st
Henry Altshul, 153 W. 76th st
J. R. Alverez, 305 E. 86th st
C. G. Am Ende, 266 W. 42d st
H. A. C. Anderson, 118 E. 86th st
James H. Anderson, 30 University pl
Joseph Anderson, 363 W. 56th st
Joseph Alfred Andrews, 9 W. 22d st
Frederick C. Anthes, 159 E. 82d st
S. T. Armstrong, 166 W. 54th st
Moses Aronson, 106 Rivington st
Morris J. Asch, 5 W. 30th st
Edward J. Aspell, 357 W. 56th st
John Aspell, 357 W. 56th st
Augustus Assenheimer, 323 E. 51st st
Megerdich Attarian, 102 E. 7th st
David P. Austin, 251 W. 25th st
J. Edward Austin, 105 W. 71st st
Charles H. Avery, 337 E. 18th st
Edward A. Ayres, 151 E. 34th st
James H. Bache, 335 W. 51st st
Eugene O. Bachman, 306 W. 33d st
Gorham Bacon, 63 W. 54th st
Clinton L. Bagg, 67 W. 45th st
Thomas S. Bahan, 257 W. 14th st
James L. Bailey, 206 E. 105th st
Thomas H. Bailey, 71 Broadway
Mercy N. Baker, 303 E. 18th st
A. Brayton Ball, 42 W. 36th st
Henry Balser, 606 E. 9th st
Wm. Balser, 218 E. 13th st
Wm. L. Baner, 38 W. 40th st
Richard T. Bang, 31 Greenwich av
L. Bolton Bangs, 31 E. 44th st
Francis M. Banta, 50 Jane st
Julius Baran, 223 E. 72d st
Justin I. Barnes, 5 E. 41st st
C. C. Barrows, 7 E. 36th st
Daniel E. Barry, 447 Lexington av
Wm. A. Bartlett, 50 W. 53d st
Joshua L. Barton, 57th E. 55th st
Simon Baruch, 51 W. 70th st
John Bates, 440 W. 23d st
W. H. Bates, 131 W. 56th st
Frederick M. Bauer, 225 E. 86th st
Ferdinand Beach, 201 W. 44th st
Wooster Beach, 159 E. 49th st
Carl Beck, 187 2d av
John N. Beekman, 18 E. 20th st
Charles S. Benedict, 339 W. 19th st
Franklin Bennett, 277 E. Broadway
George K. Bentz, 82 2d av
T. Passmore Berens, 104 W. 71st st
Charles Bernacki, 36 W. 28th st
John Bettini-Moise, 20 W. 10th st
Frederic Bierhoff, 170 W. 126th st
John Haskell Billings, 249 Madison av

Cornelius E. Billington, 106 Madison av
Arthur Bird, 35 W. 31st st
J. T. Joseph Bird, 308 W. 123d st
Wm. Randall Birdsall, 144 E. 74th st
Ernest R. Birkins, 238 W. 132d st
Louis Faugeres Bishop, 24 E. 41st st
Joseph B. Bissell, 37 W. 50th st
Mary T. Bissell, 23 W. 44th st
Constantine Bjerring, 229 E. 58th st
Carrie L. Black, 110 W. 126th st
Emily Blackwell, 53 E. 20 st
Alonzo Blauvelt, 338 W. 12th st
Geo. D. Bleything, 1008 Madison av
Charles L. Bliss, 126 E. 45th
Moritz Bloch, 337 E. 58th st
Frank Jefferson Blodgett, 140 W. 72d st
Mark Blumenthal, 987 Madison av
George W. Bogart, 151 E. 51st st
Sylvester S. Bogert, 219 E. 17th st
Edward A. Bogue, 63 W. 48th st
Hermann J. Boldt, 51 W. 52d st
I. Edwin Booth, 48 W. 24th st
J. Arthur Booth, 419 Madison av
R. O. Born, 163 W. 34th st
George H. Bosley, 346 W. 58th st
Francke H. Bosworth, 26 W. 46th st
Frank Archer Bottome, 134 W. 126th st
George H. Bottum, 17 E. 46th st
James W. Bowden, 38 Park row
Fred. J. Bowles, 154 W. 93d st
Arthur Albert Boyer, 33 W. 33d st
Nathan Gross Bozeman, 9 W. 31st st
Max Bracker, 97 2d av
Emil A. Bracklow, 362 W. 15th st
C. Cole Bradley, Marion av, Fordham
Edward Bradley, 19 W. 30th st
Elizabeth Neely Bradley, 45 E 59th st
Laban L. Bradshaw, 154 E. 74th st
Alfred V. Brailly, 468 Central Park, West
John Winters Brannan, 54 W. 11th st
John H. Branth, 420 W. 51st st
James A. Breakell, 249 W. 52d st
William Wilson Bremner, 210 W. 42d st
Edwin V. Brendon, 1½ Charlton
Thomas J. Brennan, 144 E. 89th st
Wm. J. Brickelmaier, 41 W. 49th st
Charles K. Briddon, 13 E. 33d st
Arlandan C. Bridges, 365 W. 28th st
Eugene Z. Brievogelle, 324 9th av
Nathan E. Brill, 805 Lexington av
Morris W. Brinkmann, 1443 Lexington av
E. L. Macomb Bristol, 220 Madison av
A. Norton Brockway, 50 E 126th st
Fred. J. Brockway, 105 W. 74th st
Edward B. Bronson, 123 W. 34th st
George Washington Brooks, 38 W. 32d st
G. Frederick Brooks, 38 W. 32d st
William R. Broughton, 156 Madison av
Leroy Broun, 104 W. 81st st
Charles H. Brown, 25 W. 45th st
Dillon Brown, 40 E. 57th st
Ethel Doty Brown, 210 E. 16th st
F. Tilden Brown, 40 E. 31st st
John H. Brower Browning, 120 E. 34th st
Charles E. Bruce, 456 Lexington av
Alfred F. Brugman, 588 E. 141st st
Joseph D. Bryant, 54 W. 36th st
Alexander Buchanan, 358 W. 30th st
Robert W. Buchanan, 267 W. 11th st
Augustus F. Buchler, 251 W. 45th st
Albert H. Buck, 19 E. 38th st
Francis D. Buck, 43 W. 29th st
Charles A. Bucklin, 208 W. 42d st
A. H. Buckmaster, 52 E. 31st st
Charles T. Buffum, 5 E. 27th st
L. Duncan Bulkley, 4 E. 37th st
Charles Stedman Bull, 47 W. 36th st
William T. Bull, 35 W. 35th st
William E. Bullard, 112 E. 40th st
William M. Bullard, 302 Madison av
T. Hamilton Burch, 38 W. 38th st
Thomas H. Burchard, 7 E. 48th st
L. Burgheim, 176 E. 79th st
Michael Joseph Burke, 164 Hester st
Herbert D. Burnham, 5 E. 125th st
Frederick A. Burrall, 48 W. 17th st
Maurice J. Burstein, 180 Henry st
Stephen S. Burt, 37 W. 32d st
R. B. Burton, 223 E. 48th st
Thomas W. Busche, 129 2d av
Pine E. Bush, 5 Charlton st
Chas. H. Bushong, 355 W. 14th st
George H. Butler, 42 E. 66th st
H. Hoyle Butts, 313 Madison av
Joseph Henry Byrne, 345 W. 51st st
John M. Byron, 222 E. 15th st
Caroline A. W. Cabot, 159 W. 48th st
John Cabot, 159 W. 48th st
Herbert W. F. Cady, 121 E. 40th st
Augustus Caille, 185 2d av
Peter A. Callan, 35 W. 38th st
D. M. Cammann, 19 E. 33d st
John J. Campbell, 259 W. 42d st
Robert Campbell, 2194 7th av
William C. Campbell, 259 W. 42d st
Ireius Greene Cardner, 69 W. 105th st

George F. Carey, 142 E. 19th st
Randolph B. Carmichael, 62 W. 19th st
Frank W. Carmon, 223 Grand st
Sydney Howard Carney, Jr., 201 W. 55th st
Alfred C. Carpenter, 219 E. 19th st
Elon N. Carpenter, 5 E. 41st st
Frank B. Carpenter, 17 E. 38th st
David C. Carr, 69 W. 126th st
James S. Carradine, 171 W. 126th st
Joseph S. Carreau, 41 E. 23d st
Curtis B. Carter, 23 Gramercy Park
De Lancey Carter, 114 E. 85th st
H. Skelton Carter, 130 E. 24th st
Frederick A. Castle, 55 E. 52d st
Wm. H. Caswell, 241 W. 74th st
Charles M. Cauldwell, 16 W. 54th st
Edwin R. Chadbourne, 31 W. 25th st
George W. Chamberlain, 439 Lexington av
P. Flewellen Chambers, 26 W. 47th st
Henry Dwight Chapin, 27 W. 51st st
Walter Franklin Chappell, 22 E. 42d st
George T. Chase, 236 W. 127th st
William Early Chase, 49 E. 126th st
Jean F. Chauveau, 31 W. 60th st
Jean F. Chauveau, Jr., 31 W. 60th st
Hobart Cheesman, 328 W. 57th st
Walter Cheyne, 158 & 344 W. 84th st
Joseph Frank Chmellicek, 309 E. 72d st
T. M. L. Chrystie, 216 W. 46th st
B. Frank Churchill, 165 E. 74th st
Horace Clark, 128 W. 82d st
William Brewster Clark, 50 E. 31st st
Trumbull W. Cleaveland, 242 W. 43d st
Margaret A. Cleaves, 68 Madison av
Geo. Place Clements, 82 E. 111th st
Ernest Macdonald Clerihew, 404 W. 57th st
Clement Cleveland, 59 W. 38th st
George D. Clift, 109 E. 18th st
Seth D. Close, 636 E. 143d st
Meredith Clymer, 65 W. 38th st
Cornelius Godfrey Coakley, 126 E. 45th st
George Henry Cobb, 46 E. 31st st
Thomas F. Cock, 175 2d av
Henry C. Coe, 27 E. 64th st
Lewis A. Coffin, 145 W. 12th st
Henry Coggeshall, 102 E. 57th st
Otto Cohen, 151 W. 49th st
Felix Cohn, 123 E. 59th st
Carter S. Cole, 12 W. 40th st
Palmer C. Cole, 254 W. 42d st
Wm. B. Coley, 18 E. 32d st
Christopher J. Colles, 30 W. 33d st
Charles Farnham Collins, 54 W. 37th st
Chas. S. Collins, 103 W. 63d st
Joseph Collins, 153 Lexington av
Herman L. Collyer, 109 E. 54th st
Frank C. Combes, 220 E 112th st
John E. Comfort, 1315 Franklin av
William S. Conover, 237 W. 132d st
Harry B. Conrad, 102 E. 74th st
Lewis Conrad, 24 E. 61st st
Herbert L. Constable, 125 W. 34th st
Henry Cooper Cooper, 410 E. 26th st
J. Leonard Corning, 53 W. 38th st
John B. Cosby, 308 W. 48th st
Garrett Cosine, 9 W. 125th st
Mary H. Cotton, 110 W. 126th st
William Cowen, 35 E. 60th st
Edwin B. Cragin, 62 W. 50th st
Henry E. Crampton, 256 W. 121st st
Floyd M. Crandall, 113 W. 95th st
John Joseph Crane, 57 W. 71st st
Reuben Cronson, 239 E. 119th st
James King Crook, 128 Lexington av
Michael F. J. Crowley, 312 W. 18th st
Everett Mallory Culver, 124 W. 95th st
Andrew F. Currier, 85 Madison av
B. Farquhar Curtis, 307 Madison av
Edward Curtis, 27 Washington pl
H. Holbrook Curtis, 118 Madison av
John G. Curtis, 127 E. 35th st
Elizabeth Cushier, 53 E. 20th st
Condict W. Cutler, 260 W. 57th st
Markar G. Dadirrian, 73 Lexington av
Alexander Dallas, 65 W. 36th st
James P. J. Daly, 563 E. 150th st
Charles L. Dana, 50 W. 46th st
Annie S. Daniel, 327 E. 15th st
Frank Herbert Daniel, 126 W. 126th st
Frederic Danne, 44 W. 50th st
Thomas Darlington, Jr., King's Bridge
Wm. Lacey Darlington, 507 Hudson st
Albert A. Davis, 119 E. 62d st
Edward A. Davis, 463 5th av
E. Webster Davis, 126 W. 45th st
William C. Deane, 860 Lexington av
Willmot W. Dees, 136 W. 16th st
William B. De Garmo, 56 W. 36th
Francis Delafield, 12 W. 32d st
D. Bryson Delavan, 1 E. 33d st
Charles E. Denhard, 90 Madison st
William Sawyer Dennett, 59 W. 45th st
Frederick S. Dennis, 542 Madison av
Louis De Plasse, 28 W. 24th st
Richard H. Derby, 9 W. 35th st
Leonard A. Dessar, 58 W. 49th st

Henry S. Dessau, 47 W. 56th st
William Detmold, 38 E. 9th st
John Devlin, 246 E. 23d st
J. Harvie Dew, 252 W. 54th st
R. G. L. Dieffenbach, 224 E. 48th st
Frederic H Dillingham, 636 Lexington av
Leo Dinkelspiel, 104 W. 87th st
Frank Irving Disbrow, 62 W. 97th st
George A. Dixon, 15 W. 49th st
Charles H. Dockstader, 281 W. 118th st
Frederick E. D'Oench, 12 E. 28th st
Wm. Elliott Dodd, Bloomingdale, Boulevard and 117th st
Philip E. Donlin, 129 W. Houston st
Daniel J. Donovan, 173 E. 113th st
John H. Dorn, 51 W. 9th st
John Dorning, 252 W. 25th st
Daniel S. Dougherty, 354 W. 42d st
O. B. Douglas, 123 E. 36th st
Charles North Dowd, 135 W. 73d st
William H. Draper, 19 E. 47th st
Henry S. Drayton, 27th E. 21st st
Charlotte C. Drummond, 361 E.10th st
Alexander Duane, 25 E. 31st st
A. Palmer Dudley, 640 Madison av
C. J. Dumond, 358 W. 42d st
Theodore Dunham, 347 Lexington av
Milo M. Dunton, 37 7th
Ghislani Durant, 12 W. 46th st
John Dwyer, 182 E. 111th st
Isadore Dyer, Skin and Cancer Hospital
Maurice B. Early, 84 Macdougal st
Emilio Echeverrio, 109 E. 28th st
George M. Edebohls, 198 2d av
Carl Edel, 230 2d av
J. Clifton Edgar, 115 E. 35th st
Cyrus Edson, 54 W. 9th st
Paul Ehrhart, 313 W. 30th st
Henry F. Eichacker, 79 Willett st
Anton Eidenbenz, 248 W. 49th st
Max Einhorn, 107 E. 65th st
M. Eleazarian, 106 E. 24th st
Ellsworth Eliot, 48 W. 36th st
George T. Elliot, 7 W. 31st st
George R. Elliott, 48 E. 26th st
C. Ruxton Ellison, 206 E. 116th st
Saram R. Ellison, 266 W. 42d st
Charles P. Elwert, 1364 W. 15th st
J. B. Emerson, 20 E. 30th st
J. H. Emerson, 81 Madison av
Bache Emmet, 13 E. 30th st
John Duncan Emmet, 91 Madison av
Thomas Addis Emmet, 96 Madison av
Bernhard Engelsman, 158 E. 113th st
Max. Engelsman, 349 E. 52d st
Martin F. Engman, Skin and Cancer Hospital
Michael Erlwein, 16 W. Manhattan near 9th av
Peter Hugo Ernst, 141 E. 16th st
G. A. Evans, 337 W. 15th st
Frank J. Eversfield, 154 W. 20th st
W. A. Ewing, 134 W. 58th st
W. A. Fanning, 115 W. 63d st
J. N. Farrah, 1271 Broadway
J. O. Farrington, 1991 Madison av
William H. Farrington, Astor House
M. B. Feeney, 32 E. 3d st
S. Feinberg, 148 E. 81st st
Elisha Fenn, 172 E. 116th st
John E. Ferdinand, 220 W. 127th st
James Francis Ferguson, 168 Lexington av
Jose M. Ferrer, 35 E. 31st st
William J. Fields, 176 W. 81st st
Thomas C. Finnell, 119 Leroy st
Charles S. Fischer, Jr., 110 W. 128th st
Louis Fischer, 40 Rivington st
Siegfried Fischer, 314 E. 15th st
Edward D. Fisher, 6 W. 39th st
Arthur Fishmann, 144 Rivington st
Arthur Lyman Fisk, 11 W. 50th st
Allen Fitch, 158 W. 34th st
Joseph S. Fitzgerald, 1969 7th av
Martin J. Fleming, 132 Lexington av
Walter M. Fleming, 240 5th av
Thomas W. P. 137 E. 28th st
William H. Flint, 37 E. 33d st
William F. Fluhrer, 479 5th av
James William Flynn, 116 E. 81st st
Francis Foerster, 228 W. 11th st
John P. Foland, 511 Hudson st
Charles M. Ford, 119 E. 10th st
James C. Ford, 233 E. 104th st
John A. Fordyce, 66 Park av
William E. Forrest, 101 Waverly pl
Frank P. Foster, 16 E. 31st st
Matthias L. Foster, 7 E. 41st st
John Fourness-Brice, White Star Dock, foot of W. 10th st
Edward P. Fowler, 38 W. 40th st
George B. Fowler, 56 W. 50th st
Andrew Jackson Fox, 120 Broadway
George Henry Fox, 18 E. 81st st
Edward Frankel, 217 E. 17th st
J. H. Frankenberg, 143 E. 74th st
Gustav Frauenstein, 359 W. 15th st
Gordon Frazer, 321 W. 35th st
George C. Freeborn, The Vancolear, 200 W. 56th st
Nathaniel M. Freeman, 7 E. 92d st
Sarah Angie French, 217 W. 34th st
Wolff Freudenthal, 1054 Lexington av

Alfred Friedman, 862 Lexington av
David Froelich, 117 E. 80th st
J. Henry Fruitnight, 161 W. 57th st
Franklin C. Fry, 158 E. 34th st
Frazer Chisholm Fuller, 47 W. 50th st
Robert M. Fuller, 136 W. 42d st
Anna M. Galbraith, 68 W. 50th st
A. Ernest Gallant, N. Y. Cancer Hospital
Alfred W. Gardner, 59 W. 54th st
Wm. S. Gardner, 415 West End av
Henry J. Garrigues, 155 Lexington av
Wm. J. Gaudineer, 131 E 116th st
Thomas T. Gaunt, 32 W. 33d st
Arpad G. Gerster, 56 E. 25th st
W. Travis Gibb, 365 Lexington av
Paul Gibier, 178 W. 10th st
Virgil P. Gibney, 16 Park av
Charles L. Gibson, 17 W. 54th st
J. Edward Giles, 127 E. 16th st
Walter R. Gillette, 24 W. 40th st
Wm. C. Gilliam, 12 W. 53d st
Francis Ginnasi, 236 E. 21st st
R. W. Glassford, 224 W. 48th st
John Gleises, 302 E. 57th st
Joseph Wm. Gleitsmann, 46 E 25th st
Samuel Glück, 167 E. 60th st
A. Lawrence Gnichtel, 437 W. 44th st
Augustin H. Goelet, 351 W. 57th st
Wolfgang Goetz, 732 St. Nicholas av
Herman Goldenberg, 26 E. 62d
Marcus K. Goldsmith, 1694 Lexington av
Henry Goldthwaite, Fifth av Hotel
Henry S. Goodall, 32 Beekman pl
D. H. Goodwillie, 160 W. 34th st
Bernard Gordon, 109 Henry st
Wm. S. Gottheil, The Rockland, 25 W. 53d st
David Bartlett Gould, 139 Hester st
Sidney S. Graber, 174 E. 71st st
Egbert H. Grandin, 36 E. 58th st
Reed B. Granger, 3 Bond st
Frederic H. Grant, 420 W. 47th st
Gabriel Grant, 22 E. 49th st
Joseph F. Gray, 326 W. 31st st
Landon Carter Gray, 6 E. 49th st
Rollin B. Gray, 108 W. 103d st
Soloman Greenbaum, 183 Stanton st
Robert Holmes Greene, 105 W. 71st st
Wm. Fisher Grier, 425 Lexington av
E. Harrison Griffin, 112 W. 45th st
Henry Arthur Griffin, 44 W. 48th st
John J. Griffiths, 31 E. 74th st
Henry Griswold, 42 W. 35th st
Emil Gruening, 109 E. 23d st
Arago J. Guck, 236 E. 31st st
Charles F. Guillou, 26 E. 11th st
Ramon Guiteras, 79 W. 54th st
Herman F. Guleke, 106 W. 38th st
J. H. Gunning, 36 E. 65th st
Edward Gutmann, 131 E. 76th st
Frederick Guttman, 44 W. 126th st
Fred. W. Gwyer, 332 Lexington av
Charles F. W. Haase, 794 Lexington av
Charles Alex. Habersack, 91 2d st
John Habirshaw, 250 W. 57th st
Charles E. Hackley, 59 W. 36th st
Alexander Hadden, 155 E. 51st st
Edwards Hall, 17 E. 66th st
William H. Hall, 129 E. 54th st
Luther Reeve Hallock, 155 W. 129th st
Silas F. Hallock, 136 E. 39th st
Frank Spencer Halsey, 123 W. 69th st
F. Halves, 104 E. 81st st
Allan McLane Hamilton, 20 E. 29th st
Graeme M. Hammond, 58 W. 45th st
Horace Tracy Hanks, 766 Madison av
Thomas J. Harris, 106 W. 79th st
George Tucker Harrison, 221 W. 23d st
Oscar G. Harrison, 56 W. 36th st
Jacob Hartman, 254 W. 37th st
Wm. Hassloch, 932 2d av
Louis Haupt, 63 Rivington st
Foster S. Haven, 143 W. 61st st
Walker A. Hawes, 745 Lexington av
Harry W. Hawlik, 104 St. Mark's pl
Irving S. Haynes, 316 E. 86th st
Wm. H. Haynes, 230 E. 86th st
Henry N Heineman, 60 W. 56th st
Charles Heitzman, 39 W. 45th st
Louis Heitzmann, 39 W. 45th st
Herman Hellenstein, 704 E. 5th st
J. Julio Henna, 8 W. 40th
Mary E. Hennessy, 17 E. 31st st
Joseph A. Herb, 75 St. Mark's pl
Henry Herman, 627 Lexington av
Everett Herrick, 126 Madison av
Emil Heuel, 352 Willis av
Franz Heuel, Jr., 26 Irving pl
Henry R. Heydecker, Hotel San Remo, Central Park, W. and 75th st
George Haywood, 27 W. 31st st
George B. Hickok, 167 W. 78th st
Thomas John Hillis, 51 Charlton st
Alfred K. Hills, 465 5th av
Arthur T. Hills, 129 W. 81st st
Joseph Gardner Hirons, 152 W. 49th st

Charles Hitchcock, 57 W. 36th st
H. M. Hitchcock, 38 Park row
Urban G. Hitchcock, 51 W. 29th st
Pierre C. Hoag, 107 E. 72d st
Augier Bailey Hobbs, 66 W. 38th st
Emanuel Hochheimer, 224 E. 72d st
Abbott Hodgman, 141 E. 38th st
Emil W. Hoeber, 612 Lexington av
Charles Hoffman, 243 E. 86th st
James K. Hogan, 140 Henry st
Wm. Frederic Holcombe, 54 E. 25th st
T. N. Holden, 294 East Broadway
Ward A. Holden, 25 W. 24th st
Thomas H. Holgate, 206 W. 14th st
Geo. W. Holmes, 1491 Broadway
John F. Holmes, 844 E. 165th st
Martha C. Holmes, 75 W. 126th st
L. Emmett Holt, 15 E. 54th st
Oscar P. Honeggar, 171 E. 71st st
Franklin P. Hoover, 160 W. 34th st
George B. Hope, 34 W. 51st st
J. Louis Hopkins, 233 W. 54th st
J. Swinburne Hopkins, 150 W. 11th st
John Horn, 147 E. Broadway
Richard N. W. K. Horner, 104 W. 84th st
Lucius W. Hotchkiss, 5 E. 41st st
H. Seymour Houghton, 301 W. 88th st
George E. Hubbard, 257 W. 52d st
Samuel T. Hubbard, 27 W. 9th st
Wm. N. Hubbard, 7 E. 41st st
Marvin D. Hubbell, 108 E. 36th st
Francis Huber, 113 E. Broadway
Joseph Huber, 113 E. Broadway
Walter G. Hudson, 73 W. 131st st
Henry G. Hughes, S. S. "Maasdam," Netherland Am. Trans. Co.
Joseph J. Hull, 64 W. 35th st
Frederic T. Hume, 82 E. 79th st
Wm. A. Hume, 82 E. 79th st
George H. Humphreys, 23 E. 47th st
Alexander S. Hunter, 32 E. 29th st
Dwight W. Hunter, 233 Madison av
Abel Huntingdon, 346 Broadway
Francis Hustace, 413 Madison av
Frederick E. Hyde, 20 W. 53d st
John Arthur Irwin, 14 W. 29th st
Chas. Warren Jackson, 163 W. 81st st
Frank W. Jackson, 12 W. 18th st
George Thomas Jackson, 14 E. 31st st
Victor Hugo Jackson, 240 Lenox av
Wm. H. Jackson, 556 Madison av
Abraham Jacobi, 110 W. 34th st
Mary Putnam Jacobi, 110 W. 34th st
Arthur M. Jacobus, 126 W. 48th st
George W. Jacoby, 100 E. 58th st
Edward H. Janes, 57 W 95th st
Edward G. Janeway, 36 W. 40th st
Thomas T. Janeway, 26 W. 17th st
John P. Janinski, 227 E. 58th st
Joseph E. Janvrin, 191 Madison av
Wm. Chapman Jarvis, 142 Madison av
John C. Jay, 54 W. 47th st
Alexander McL. Jeffrey, 153 E. 39th st
David D. Jennings, 333 E. 20th st
Charles Taylor Jewett, 162 W. 22d st
Laurence Johnson, 363 W. 28th st
Wm. Henry Johnson, 110 W. 27th st
George W. Johnson, 70 Rivington st
S. Beach Jones, 28 W. 32d st
Israel C. Jones, 182d st and 3d av
S. Seabury Jones, 809 Lexington av
Adonirani B. Judson, 38 E. 25th st
Kenneth Frank Junor, 160 W. 29th st
Moses S. Kakeles, 243 E. 49th st
Richard Kalish, 50 W. 36th st
Fred. Kammerer, 667 Madison av
Adolph Kantrovitz, 120 Rivington st
W. H. Katzenbach, 22 W. 45th st
Meyer Katzenberg, 134 E. 82d st
Guido Katzenmayer, 625 Lexington av
Thaddeus J. Keane, 53 W. 16th st
T. J. Kearney, 126 E. 29th st
Henry J. Kelly, 267 Lexington av
James E. Kelly, 16 E. 29th st
Charles B. Kelsey, 25 Madison av
J. T. Kemp, 225 E. 72d st
Francis S. Kennedy, 15 W. 73d st
John M. Kennedy, 163 W. 97th st
John T. Kennedy, 107 E. 29th st
George W. Kerr, 47 W. 50th st
Adolph Kessler, 644 Lexington av
Theodore Keune, 230 E. 119th st
Edward L. Keyes, 109 E. 34th st
Eleanor B. Kilham, 5 Livingston pl
Otto G. T. Kiliani, 143 E. 21st st
Ruel B. Kimball, 20 W. 47th st
Charles A. Kinch, 285 W. 70th st
David F. King, 651 Lexington av
Ferdinand King, 315 W. 58th st
Beverly O. Kinnear, 18 W. 21st st
J. Eugene Kinney, 10 E. 43d st
Francis P. Kinnicutt, 42 W. 37th st
Isaac L. Kip, 448 5th av
Giulio H. Kirch, 45 W. 9th st
Joseph M. W. Kitchen, 168 W. 58th st
Gustav A. Kletsch, 34 E. 60th st
Hermann G. Klotz, 42 E 22d st
Herman Knapp, 25 W. 24th st
John B. Knapp, 62 W. 51st st
Charles H. Knight, 20 W. 31st st
George Knipe, 354 W. 24th st
Rollins Henry Knowles, 166 W. 128th st
August Koehler, 215 E. 19th st

R. A. Koempel, 209 Broome st
Henry F. Koester, 233 E. 85th st
Carl Koller, 18 E 58th st
Henry Koplik, 175 E. 70th st
Frederick de Kraft, 242 W. 42d st
George W. Kram, 310 E. Broadway
Carl F. Kremer, 112 E. 57th st
Henry Krollpfeiffer, 48 St. Mark's pl
Florian Krug, 13 E. 41st st
Herman F. Kudlich, 56 W. 17th st
Fereol T. Labadie, 178 W. 10th st
Jedediah Ladd, 232 E. 23d st
Louis J. Ladinski, 243 E. Broadway
Edward W. Lambert, 2 E. 37th st
Walter Eyre Lambert, 30 W. 33d st
Fred. Lange, 130 E. 61st st
Gustav Langmann, 121 W. 57th st
Boleslaw Lapowski, 122 E. 59th st
James R. Latham, 131 W. 11th st
James Law, 64 E. 122d st
Charles A. Leale, 604 Madison av
James R. Leaming, 18 W. 38th st
Wm. G. Le Boutillier, 50 E. 25th st
M. D. Lederman, 1029 Park av
Charles Carroll Lee, 79 Madison av
Egbert Le Fevre, 161 W. 23d st
George M. Lefferts, 6 W. 33d st
Bartholomeus Lefkowics, 9 Clinton st
Ellen C. Leggett, 303 E. 18th st
Carl H. Lellman, 47 E. 23d st
Alexis M. Leon, 81 E. 56th st
George Wm. Leonard, The Del Monte, 102 W. 75th st
Wm. R. Leonard, 463 W. 21st st
Z. L. Leonard, 326 E. 116th st
A. Mona Lesser, 713 Lexington av
Wm. M. Leszynsky, 61 E 75th st
Allen Levings, 1700 Broadway
Frederick J. Leviseur, Hoffman Arms, 640 Madison av
David Clarence Lewinthal, 164 Henry st
Daniel Lewis, 249 Madison av
Amos C. Lewis, Skin and Cancer Hospital, Fordham Heights
Charles Henry Lewis, 18 W. 61st st
Frank N. Lewis, 127 Madison av
Albert Henry Leyton, The Rutland, 256 W. 57th st
Alexander F. Liautard, 62 W. 85th st
Charles Liebenau, 1143 Washington av
J. Monroe Liebermann, 309 E. 4th st
Anton Liebig, College Point, L. I.
Edward N. Liell, 203 W. 78th st
Howard Lilienthal, 33 E. 31st st
Rufus P. Lincoln, 22 W. 31st st
B. Abbott Lindsey, 136 W. 44th st
Joseph H. Linsley, 40 Gramercy Park
Wm. M. Lively, 218 W. 28th st
Frank Livermore, 309 Mulberry st
Watts C. Livingston, 357 W. 30th st
Frederick Osborn Lloyd, 180 E. 72d st
Samuel Lloyd, 24 W. 50th st
Charles E. Locke, 245 W. 11th st
Charles E. Lockwood, 59 W. 35th st
George Roe Lockwood, 30 E. 35th st
Hugo J. Loebinger, 170 E. 75th st
Herman Lowenthal, 127 E. 84th st
Lawson A. Long, 45 W. 28th st
Alfred L. Loomis, 19 W. 34th st
H. P. Loomis, 58 E. 34th st
James E. M. Lordly, 243 W. 34th st
Edward J. Lorenze, 1584 Madison av
Celestia A. Loring, 124 W. 88th st
James M. Ludden, 270 W. 123d st
Joseph Edward Lumbard, 1975 7th av
Wm. T. Lusk, 47 E. 34th st
Sigmund Lustgarten, 15 E. 62d st
Alexander Lyle, 312 E. 81st st
James Walter Lyman, 424 W. 34th st
P. J. Lynch, 216 E. 13th st
Jonathan F. Lyon, 231 E. 116th st
Samuel K. Lyon, 312 2d av
D. Stanley Lyons, 223 E. 30th st
Frederick A. Lyons, 340 Lexington av
Charles McBurney, 40 W. 36th st
Samuel McCallum, 17 Stuyvesant av
Henry B. McCarroll, 18 W. 61st st
E. S. McClellan, 245 9th av
Peter J. McCourt, 233 W. 23d st
Wm. McCracken, 305 E. 18th st
John A. McCreery, 350 Lexington av
John McCroskery, 319 W. 116th st
Dennis J. McDonald, 207 E. 43d st
Wm. M. H. McEnroe, 55 E. 11th st
George D. McGauran, 416 W. 51st st
Timothy J. McGillicuddy, 125 E. 83d st
E. L. H. McGinnis, 35 W. 38th st
J. P. McGowan, 139 E. 28th st
Frank A. McGuire, 631 Lexington av
Burnett C. McIntyre, 221 W. 4th st
Wm. McKay, 40 E. 110th st
James F. McKernon, 359 W. 47th st
W. Duncan McKim, 721 Madison av
Joseph A. McLaughlin, 155 E. 45th st
Arthur Muir McLaurie, 234 2d av
Wm. M. McLaury, 244 W. 42d st
Malcolm McLean, 29 E. 126th st
James A. McLochlin, 157 W. 21st st
J. B. McMahon, 266 E. Broadway
N. G. McMaster, 322 E. 15th st
Robert McMurray, 234 2d av
Julia G. McNutt, 265 Lexington av
Sarah J. McNutt, 265 Lexington av
Daniel E. McSweeny, 129 E. 29th st

J. Milton Mabbott, 19 5th av
A. E. McDonald, 66 3d av
Belle J. Macdonald, 25 Union pl
Carlos F. Macdonald, 334 5th av
H. J. Macdonald, 25 Union pl
E. Macfarlan, 315 W. 126th st
Ferdinand S. Machale, 218 E. 87th st
D. H. Mackie, 208 W. 21st st
Wm. Austin Macy, Ward's Island
David Magie, 32 W. 48th st
J. J. E. Maher, 213 W. 23d st
Otto Maier, 321 E. 18th st
Morris Manges, 941 Madison av
Edward C. Mann, 162 E. 23d st
Marcus Markiewicz, 251 Broome st
Francis H. Markoe, 20 W. 30th st
Thomas Masters Markoe, 20 W. 30th st
Wilbur B. Marple, 29 W. 31st st
Geo. M. Marshall, 103 Park av
J. Martin, 550 W. 46th st
Thos. W. Martin, Kingsbridge
Wilbur Fisk Martin, 1976 Madison av
Siegfried Martus, 257 E. Broadway
David M. Marvin, 2099 5th av
R. Osgood Mason, 348 W. 58th st
Sumner A. Mason, 128 W. 127th st
E. A. Maxwell, 214 E. 50th st
Charles H. May, 59th and Madison av
Calvin S. May, 57th and 7th av
Abraham Mayer, 40 E. 60th st
Emil Mayer, 238 E. 116th st
A. W. Maynard, 264 W. 42d st
E. Meierhoff, 57 E. 64th st.
Samuel J. Meltzer, 66 E. 124th st
Walter Mendelson, 159 W. 74th st
Frank W. Merriam, 11 Charlton st
Fred. G. Merrill, 20 Greenwich st
Edward J. Messemer, 144 2d av
Michael J. B. Messemer, 150 2d av
Alfred Meyer, 749 Madison av
Willy Meyer, 700 Madison av
Leonidas L. Mial, 145 W. 12th st
Ludwig M. Michaelis, 981 Lexington av
Robert Milbank, 145 W. 48th st
Henry B. Millard, 4 E. 41st st
Augustus Milleg, 66 2d av
E. A. Miller, 242 E. 86th st
Frank E. Miller, 121 W. 34th st
Joseph Chas. Miller, 358 W. 42d st
Theo. DeClermont Miller, 102 E. 124th st
Thomas S. P. Miller, 150 W. 37th st
Jackson M. Mills, 107 E. 26th st
Charles Milne, 124 E. 45th st
John C. Minor, 10 E. 41st st
Hubbard W. Mitchell, 747 Madison av
James Mitchels, 136 E. 65th st
William F. Mittendorf, 140 Madison av
Charles H. Moak, 2432 2d av
Henry Moeller, 240 W. 38th
Edmund M. Moffett, 358 W. 51st
Richard Mollenhauer, 304 E. 18th st
Nathan Molner, 56 Eldridge st
Joseph A. Monell, 236 W. 22d st
Charles James Mooney, 178 Lexington av
William Oliver Moore, 85 Madison av
Joseph Moorhead, 310 2d av
Benjamin Morjé, 181 E. 71st st
J. Lee Morrill, 67 E. 79th st
George F. Morris, 161 W. 87th st
Robert S. Morris, 146 E. 71st st
Robert T. Morris, 133 W. 34th st
Prince A. Morrow, 66 W. 40th st
William Golden Mortimer, 612 Lexington av
Bowditch Morton, 225 5th av
William James Morton, 19 E. 28th st
George J. Moser, 359 E. 10th st
Mortimer A. Moses, 123 W. 132d st
Gustave Mourraille, 74 W. 12th
Eugene C. Mowry, 355 W. 42d st
Robert P. Muellenbach, 230 E. 10th st
Richard W. Müller, 123 E. 10th st
Paul F. Mundé, 20 W. 45th st
John P. Munn, 18 W. 58th st
Wm. H. Munn, 212 W. 50th st
George E. Munroe, 43 E. 35th st
Robert A. Murray, 235 W. 23d st
Christopher J. Musgrave, 65 Monroe st
Howard G. Myers, 226 W. 75th st
Thad. Halsted Myers, 24 W. 50th st
Robert C. Myles, 25 W. 36th st
John T. Nagle, 47 E. 21st st
Charles E. Nammack, 244 Madison st
Wm. H. Nammack, 11 Rutgers st
Ignatz L. Nascher, 81 7th st
Miles Henry Nash, 217 W. 43d st
George G. Needham, 218 E. 19th st
Lewis Knode Neff, 1476 Lexington av
Wm. B. Neftel, 16 E. 48th st
James Neil, 1712 Madison av
John H. Nesbitt, 208 W. 42d st
Albert W. Neufield, 111 E. 116th st
John J. Neville, 87 Lexington av
Albert S. Newcomb, 139 W. 42d st
James E. Newcomb, 131 W. 61st st
Wm. Newman, 515 Grand st
Eleanor Frost Newton, 711 Lexington av
Robert Safford Newton, 103 E. 16th st
James A. Nichols, 143 W. 34th st
James E. Nichols, 456 Lexington av
Curt E. H. Nicolai, 229 E. 119th st
Henry D. Nicoll, 51 E. 57th st
J. R. Nilsen, 9 E. 53d st
J. Douglas Nisbet, in Europe

John G. Noble, 222 W. 34th st
C. A. Nolden, 200 W. 98th st
Felix Nordemann, 210 E. 60th st
Henry S. Norris, 123 W. 34th st
Wm. P. Northrup, 57 E. 79th st
Henry D. Noyes, 233 Madison av
Hermann Obbarius, 110 2d st
M. C. O'Brien, 161 W. 122d st
Joseph O'Dwyer, 967 Lexington av
Robert Offenbach, 825 Lexington av
Frank W. Olds, 26 W. 71st st
Simon J. O'Neil, 249 E. 86th st
Isaac Oppenheimer, 60 E 67th st
Henry S. Oppenheimer, 49 E. 23d st
Fessenden N. Otis, 5 W. 50th st
Wm. K. Otis, 5 W. 50th st
Chas. F. Overmiller, 145 E. 30th st
W. H. Oyler, 238 W. 124th st
Charles W. Packard, 447 Park av
Henry C. Paddack, Marion av
R. C. M. Page, 31 W. 33d st
Edmund J. Palmer, 1342 Lexington av
Charles Inslee Pardee, 34 W. 38th st
Edward L. Pardee, 120 W. 97th st
Wm. Halleck Park, 128 W. 11th st
Angenette Parry, 10th av and 61st st
John Parsons, Kingsbridge
Ralph L Parsons, 21 E. 44th st
Edward L. Partridge, 19 5th av
Stewart Paton, 596 Lexington av
F. N. Patterson, 126 E. 34th st
Sanders McAlister Payne, 266 Madison av
Daniel Pearsons Pease, 12 W. 25th st
Edward H. Peaslee, 29 Madison av
Edward Sprague Peck, 53 W. 50th st
Grace Peckham, 25 Madison av
Edward W. Peet, Sloane Maternity Hospital
Henry T. Peirce, 272 Lenox av
Geo. L. Peirce, 177 W. 102d st
Joseph F. Perkins, 7 E. 27th st
John Gardner Perry, 48 E. 34th st
George A. Peters, 45 W. 35th st
Frederic Peterson, 201 W. 54th st
Alfred G. Pfeiffer, 236 E. 53d st
Joseph Pfeiffer, 130 E. 62d st
A. M. Phelps, 40 W. 34th st
Charles Ernestus Phillips, 51 E. 120th st
Wendell C. Phillips, 161 E. 37th st
Henry G. Piffard, 10 W. 35th st
W. O. Plimpton, 45 W. 84th st
Harry P. Poinsett, 301 W. 12th st
Wm. M. Polk, 7 E. 36th st
Oren Day Pomeroy, 316 Lexington av
Thomas R. Pooley, 107 Madison av
Charles T. Poore, 5 W. 30th st
Alexander B. Pope, 126 W. 45th st
W. Evelyn Porter, 30 W. 33d st
Sarah E. Post, 13 W. 42d st
Seneca D. Powell, 12 W. 40th st
Charles A. Powers, 35 W. 35th st
Adolf Pramann, 251 E. 86th st
Isaiah F. Pray, 115 W. 34th st
Walter E. S. Preston, 105 E. 89th st
C. Prince, 56 W. 50th st
R. L. Pritchard, 72 W. 49th st
Wm. B. Pritchard, 353 W. 58th st
Alfred E. M. Purdy, 304 Madison av
Henry Lavington Purdy, 180 E. 72d st
Leopold Putzel, 13 E. 57th st
Charles E. Quimby, 44 W. 36th st
Maximilian G. Raefle, 112 E. 10th st
Von F. Raitz, 141 W. 132d st
E. Benjamin Ramsdell, 581 Lexington av
Edwin D. Ramsdell, 158 E. 33d st
Ambrose L. Ranney, 156 Madison av
Charles C. Ransom, 152 W. 48th st
Samuel Rapp, 350 E. 50th st
David Lewis Rauch, 1031 Lexington av
Godfrey W. Rautenberg, 335 E. 87th st
Aimee Raymond, 116 E. 30th st
Adrian Y. Reid, 104 Lexington av
John J. Reid, 853 Lexington av
I. H. Reiley, 168 W. 23d st
Pio Renfigo, 216 W. 45th st
Frederick Thomas Reyling, 210 E. 50th st
Meyer L. Rhein, 104 E. 58th st
Clarence C. Rice, 123 E. 19th st
Haynes L. Richardson, 79 Washington pl
Waldo H. Richardson, 79 Washington pl
Wm. Richter, 303 E. 19th st
John Ridlon, 337 W. 57th st
Frank W. Ring, 101 Park av
J. H. Ripley, 605 Lexington av
Wm. Cabell Rives, 113 E. 38th st
Milton Josiah Roberts, 122 W. 71st st
Nathan S. Roberts, 804 Lexington av
Thomas S. Robertson, 28 E. 20th st
A. R. Robinson, 248 W. 42d st
Beverley Robinson, 37 W. 35th st
Fred. C. Robinson, 221 W. 11th st
A. D. Rockwell, 113 W. 34th st
Miron J. Rockwell, 1368 Lexington av
Louis A. Rodenstein, St. Nicholas av. and 155th st
Traugott F. M Roediger, 312 W. 35th st

Adolphe Gaston Roeth, 1642 av A
Oscar H. Rogers, 346 Broadway
Willard H. Rogers, 225 W. 22d st
De Witt C. Romaine, 473 Hudson st
Stephen W. Roof, 223 W. 23d st
Samuel Irving Roome, 53 W. 105th st
D. B. St. John Roosa, 20 E 30th st
J. West Roosevelt, 32 E. 31st st
Francis F. Root, 94 W. 104th st
Achilles Rose, 230 2d av
E. Rosenberg, 784 Lexington av
Julius Rosenberg, 37 E. 62d st
Paul Joseph Rosenheim, 206 E. 46th st
Henry Rosner, 333 E. 83d st
James Ross, 669 5th av
Ignatz Movray Rottenberg, 280 2d st
Alvah Rowe, 349 W. 32d st
Julius Rudisch, 121 E. 60th st
Adolph Rupp, 406 W. 34th st
Ernest F. Ruppe, 162 Prince st
John F. Russell, 172 W. 10th st
Wm. Logie Russell, 151 E. 50th st
Gustavus A. Sabine, 8 E. 24th st
B. Sachs, 112 E. 61st st
Charles Walton Sanders, 53 E. 53d st
Joseph Anthony Sanders, 251 W. 42d
Robert Alfred Sands, 39 E. 33d st
Luis F. Sass, 56 W. 39th st
F. Le Roy Satterlee, 8 W. 18th st
Thomas E. Satterthwaite, 17 E. 44th st
R. H. Saunders, 791 Madison av
Eugene Coleman Savidge, 28 W. 59th st
Lewis A. Sayre, 285 5th av
A. Schapinger, 165 E. 60th st
Barnim Scharlau, 66 W. 35th
Julius Scheider, 187 E. 64th st
John Wm. Schelpert, 64 W. 96th st
Philip Scheu, 440 E. 16th st
Joseph Schmitz, 33 Delancy st
Joseph Schnetter, 13 E. 41st st
Charles P. R. Schoenemann, 440 Lexington av
Warren Schoonover, 115 E. 59th st
Charles Schram, 136 E. 82d st
Henry H. Schroeder, 230 W. 135th st
Edward F. Schwedler, 29 E. 77th st
Richard Jessup Scofield, 347 W. 14th st
George Scott, 640 Madison av
Charles D. Scudder, 1 E. 33d st
Louis L. Seaman, 18 W. 31st st
Wm. S. Seamens, 16 W. 52d st
Byron H. Searing, 316 W. 28th st
Edward C. Seguin, 419 Madison av
August Seibert, 137 E. 19th st
Frederick S. Sellew, 61 E. 79th st
Isaac M. Seltzer, 270 W. 39th st
W. M. Seward, 126 E. 86th st
Walter D. Sewell, 320 Lexington av
Samuel Sexton, 12 W. 35th st
Newton M. Shaffer, 28 E. 38th st
Wm. Shannon, 212 2d av
Frank E. E. Shaw, 1379 Lexington av
George F. Shrady, 8 E. 66th st
Reuben C. Schultz, 109 E. 54th st
H. M. Silver, 39 7th st
Lewis M. Silver, 103 W. 72d st
Charles E. Simmons, 742 Lexington av
Wm. Kelly Simpson, 952 Lexington av
Joseph Simrock, 110 E. 25th st
H. Marion Sims, 4 W. 47th st
A. Alexander Smith, 40 W. 47th st
Andrew Heermance Smith, 22 E. 42d st
Charles Smith, 375 Broome st
Franklin Smith, 375 Broome st
Gouverneur M. Smith, 14 E. 17th st
Judson C. Smith, 337 E. 19th st
J. Gardner Smith, 307 Lenox av, cor 125th st
S. Hanbury Smith, 39 W. 4th st
Walter H. Snow, 2068 5th av
Frederic E. Sondern, 36 W. 33d st
George A. Spalding, 248 Lenox av
Louis Spannhake, 244 E. 13th st
H. Draper Speakman, 154 Madison av
Arnot Spence, 70 W. 71st st
E. C. Spitzka, 712 Lexington av
Homer B. Sprague, 1383 Lexington av
Henry S. Stark, 270 E. 7th st
Moses Allen Starr, 22 W. 48th st
Henry S. Sterns, 21 E. 44th st
Ch. F. Steiger, 110 7th st
Alexander W. Stein, 30 W. 15th st
Gottlieb Stein, in Europe
Richard Stein, 811 Lexington av
Adelrich Steinach, 188 2d av
Lassar Stern, 164 E. 81st st
John A. Steurer, 78 W. 47th st
Wm. Stevens, 133 W. 41st
George T. Stevens, 33 W. 33d st
George D. Stewart, 149 Lexington av
Henry A. Stewart, 207 W. 22d
George C. Stiebeling, 71 St. Mark's pl
Charles W. Stimson, 68 W. 40th st
Daniel M. Stimson, 11 W. 17th st
L. A. Stimson, 34 E. 33d st
G. Mozart Stoeckel, 361 W. 42d st
Wm. F. Stone, 114 E. 18th st
Wm. L. Stowell, 28 W. 36th st
A. Russell Strachan, 25 E. 30th st
Ludwig Straus, 211 E. 13th st
Rosa Welt Straus, 8 W. 72d st
Ransel M. Streeter, 27 W. 38th st

J. Watson Stronach, 265 W. 52d st
Frederic Russell Sturgess, 16 W. 32d st
Arnold Sturmdorf, 245 E. 13th st
Fremont Swain, 148 W. 49th st
Albert T. Swan, 317 E. 18th st
John H. Swasey, 34 E. 28th st
Edwin E. Swift, Hotel Endicott, 81st and Columbus av
George Montague Swift, 29 E. 31st st
Wm. J. Swift, 40 E. 30th st
R. E. Swinburne, 128 W. 126th st
Robert Bancker Talbot, 64 W. 50th st
George W. Talson, 219 W. 12th st
Wm. Allan Taltavall, 220 W. 128th st
J. Oscroft Tansley, 28 W. 43d st
C. Fayette Taylor, 201 W. 54th st
Clarence O. Taylor, 1449 Lexington av
Henry Ling Taylor, 201 W. 54th st
Robert W. Taylor, 40 W. 21st st
Stanley D. Terry, 14 W. 34th st
Jacob Teschner, 134 E. 61st st
Robert H. Theyson, 311 6th st
Allen M. Thomas, 64 W. 50th st
J. Clark Thomas, 107 W. 47th st
Theodore Gaillard Thomas, 600 Madison av
Edward W. Thompson, 302 E. Broadway
George S. Thompson, 239 W. 69th st
Von Beverhout Thompson, 111 W. 43d st
W. Gilman Thompson, 49 E. 30th st
Wm. H. Thomson, 7 W. 56th st
Wm. J. Tierney, 212 E. 109th st
Max Toeplitz, 123 E. 62d st
Byron V. Tompkins, 26 W. 61st st
Franz J. A. Torek, 164 E. 79th st
Sinclair Tousey, 29 W. 38th st
Wisner R. Townsend, 16 Park av
E. Clark Tracy, 30 E. 126th st
Samuel G. Tracy, 25 W. 55th st
Henry Savary Trigg, 106 W. 126th st
Henry Tuck, 346 Broadway
C. P. Tucker, 43 W. 26th st
Ervin A. Tucker, Sloane Maternity Hospital
Edward G. Tufts, 30 Oliver st
Theodore K. Tuthill, 319 W. 18th st
Marcus E. Tully, 147 E. 37th st
George Montgomery Tuttle, 49 W. 38th st
James P. Tuttle, 35 W. 45th st
Hoell Tyler, Insane Asylum, B. I.
Sigmund Tynberg, 321 E. 42d st
Henry H. Tyson, Jr., 47 W. 51st
Sophia F. Unger, 241 W. 43d st
Ferd. C. Valentine, 236 W. 51st st
Wm. A. Valentine, 45 W. 35th st
Francis Valk, 163 E. 37th st.
Wm. W. Van Arsdale, 207 W. 56th st
George M. Vandegrift, 277 Henry st
John Van Der Poel, 36 W. 39th st
S. O. Van Der Poel, 47 E. 25th st
Waldron B. Vanderpoel, 106 E. 24th st
Clinton DeWitt Van Dyck, "The Sherman," 66 W. 95th st
Frank Van Fleet, 158 E. 81st st
Richard Van Santwood, 106 W. 122d st
W. W. Van Valzah, 10 E. 43d st
Charles Van Wert, 115 W. 97th st
Bernard E. Vaughan, 209 W. 55th st
Maus R. Vedder, 690 Madison av
H. N. Vineberg, 167 E. 61st st
Albert Volkenberg, 64 Rivington st
Eric Vondergoltz, 193 2d av
Andrew Von Grimm, 31 1st st.
C. A. Von Ramdohr, 105 7th st
Benjamin F. Vosburgh, 40 W. 88th st
Walter Vought, 12 W. 10th st
Henry John Wackerbath, 96 2d av
Clinton Wagner, 65 W. 38th st
Edward Waitzfelder, 105 E. 55th st
Ralph Waldo, 72 W. 45th st
Louis Waldstein, 450 Madison av
Henry F. Walker, 8 E. 30th st
John B. Walker, 33 E. 33d st
Leroy Pope Walker, 25 E. 24th st
Samuel Spencer Wallian, Washington Heights, Ft. Washington av and 131st st
S. J. Walsh, 9 E. 129th st
Walter J. Walsh, 104 W. 34th st
Luis P. Walton, 35 W. 35th st
Edwin F. Ward, 29 W. 36th st
James E. Ward, 59 W. 62d
O. J. Ward, 160 W. 94th
Whitfield Ward, 128 E. 36th st
Geo. T. Warford, 138 W. 29th st
Frederic M. Warner, 66 W. 56th st
John W. Warner, 107 E. 72d st
John Warren, 47 E. 30th st
John S. Warren, 204 W. 38th st
M. Claudius Warsaw, 202 E. 50th st
John W. Warth, 253 Broome st
Wickes Washburn, 42 Irving pl
Sigismund Waterman, 131 E. 59th st
Robert L. Watkins, 320 W. 145th, cor. Bradhurst av
Wm. S. Watson, 105 W. 47th st
Robert Watts, 45 W. 36th st
Leonard Weber, 25 W. 46th st
David Webster, 266 Madison av
Edgar T. Weed, 246 Lenox av
John E. Weeks, 154 Madison av
Robert F. Weir, 37 W. 33d st
Ludwig Weisse, 744 Lexington av

Faneuil D. Weisse, 46 W. 20th st
Brooks H. Wells, 71 W. 45th st
Walter S. Wells, 231 W. 23d st
Sara Welt, 232 E. 58th st
Edmund C. Wendt, 712 Madison av
N. S. Westcott, 156 W. 12th st
Wm. H. Weston, 400 W. 22d st
Geo. T. Wetmore, 252 W. 53d st
George Densmore Wheat, 47 E. 59th st
E. D. Wheeler, 122 E. 31st st
John H. Wheeler, 319 W. 54th st
George G. Wheelock, 75 Park av
Wm. E. Wheelock, 26 E. 68th st
Charles Bell White, 107 W. 72d st
Granville Moss White, 227 West End av
John Blake White, 1013 Madison av
Octavius A. White, 1011 Madison av
Henry Whitehouse, 4 E. 37th st
Fred. Whiting, 52 E. 30th st
Royal Whitman, 126 W. 59th st
John F. Whitmyer, 57 W. 10th st
Joseph Wiener, 1046 5th av
Richard G. Wiener, 48 E. 65th st
Fred. H. Wiggin, 55 W. 36th st
Mark H. Williams, 227 W. 135th st
Robert J. Wilson, 162 E. 38th st
Gustavus S. Winston, 42 W. 39th st
Joseph E. Winters, 36 W. 32d st
Lazare Wischnewetzky, 246 5th av
Rudolph A. Witthaus, 118 W. 55th st
Justin Wohlfarth, 121 E. 128th st
Benjamin Wood, Jr., 846 E. 165th st
Wm. B. Wood, 22 E. 41st st
John Woodman, 123 E. 25th st
Willard Parker Wooster, 423 W. 51st st
J. Warren Worcester, 141 W. 34th st
J. Williston Wright, 53 W. 19th st
Solomon Wrubel, 173 E. 105th st
Peter B. Wyckoff, 23 W. 57th st
Robert Hawthorne Wylie, 215 W. 43d st
Gerardus H. Wynkoop, 128 Madison av
W. Gill Wylie, 215 W. 43d st
Leroy Milton Yale, 432 Madison av
Charles E. Young, 244 W. 56th st
J. V. D. Young, 24 E. 41st st
Adolph Zederbaum, 179 E. 109th st
Adolph Zeh, 343 W. 50th st
A. P. Zemansky, 640 Madison av
Vincent Zolnowski, 33 W. 16th st

Number of Members, 1201.

Deceased: Frederick Bedford, December 28, 1891; Wm. R. Birdsall, June 7, 1892; Charles W. Buehler, November 17, 1891; Roswell P. Collin, December 21, 1891; Philip E. Donlin, June 12, 1892; Henry Goldman, January 30, 1892; Wm. W. Jones, July 11, 1891; John F. Keefe, August 26, 1891; Colin Mackenzie, January 6, 1892; David Matthews, July 10, 1891; John Messenger, May 19, 1892; Francis Pinner, July 3, 1891; Charles F. Stillman, April 29, 1892; Wm. H. Van Wyck, November 16, 1891.

THE NEW YORK ACADEMY OF MEDICINE.

[Instituted January 6, 1847. Incorporated June 23, 1851.]

MEETINGS.—Stated, first and third Thursday in every month, from the first Thursday in October to the first Thursday in June, inclusive, at 8 P. M., at 17 West Forty-third street, New York; nomination of officers, first Thursday in December; election, first Thursday in January. Library open free to the public, from 10 A. M. to 10 P. M.; in summer, 10 A. M. to 6 P. M. Physicians in active practice for the three years preceding application and residents of the State of New York, are eligible for Resident Fellowship. Surgeons in the U. S. Army, Navy, or Marine-Hospital Service, and physicians residing in other States, are eligible for Non-resident Fellowship.

Officers. (January, 1892.)

Alfred L. Loomis, *President.*

R. C. M. Page, Edward L. Keyes, Charles McBurney, *Vice-Presidents.*
Richard Kalish, *Recording Secretary.*
Orlando B. Douglas, *Treasurer.*
M. Allen Starr, *Corresponding Secretary.*
Adoniram B. Judson, *Statistical Secretary.*
Reginald H. Sayre, *Assistant Secretary.*

Trustees:

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Frederick A. Castle, Everett Herrick.

William F. Cushman, *Treasurer for the Trustees.*

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Clarence C. Rice, Charles H. Knight.

Committee on Library:

Timothy M. Cheesman, Edward Sprague Peck, Egbert H. Grandin,
Charles A. Powers, George T. Jackson.

Timothy M. Cheesman, *Executive Librarian.*

Mr. John S. Brownne, *Resident Librarian.*

Delegates to State Medical Society to January, 1893:

Simon Baruch, F. H. Bosworth, Henry C. Coe,
J. Henry Fruitnight, Francis P. Kinnicutt.

Resident Fellows (June, 1892).

(Where no town is mentioned New York City is to be understood.)

Robert Abbe, 11 W. 50th st
Frank Abbott, 22 W. 40th st
Alpheus E. Adams, Newburg, N. Y.
Calvin T. Adams, 200 W. 55th st
Isaac Adler, 12 E. 60th st
David H. Agan, 363 Broome st
Enrique V. Agramonte, 435 W. 22d st
John S. Aitkin, 359 W. 30th st
Samuel Alexander, 95 Park av
Welcome T. Alexander, 940 S. Nicholas av
L. A. W. Alleman, 164 Montague st, Brooklyn, N. Y.
Charles S. Allen, 21 E. 28th st
Charles W. Allen, 696 Madison av
Thomas H. Allen, 52 W. 45th st
Henry Altshul, 153 W. 76th st
James H. Anderson, 30 University pl
Wm. B. Anderton, 34 W. 47th st
Joseph L. Andrews, 9 W. 22d st
Lewis Arcularius, 121 E. 25th st
Samuel T. Armstrong, 832 7th av
Moses Aronson, 106 Rivington st
Jacob H. Asch, 770 Lexington av
Morris J. Asch, 5 W. 30th st
August Assenheimer, 323 E. 51st st
Gorham Bacon, 63 W. 54th st
Thomas S. Bahan, 257 W. 14th st
A. Brayton Ball, 42 W. 36th st
Henry Balser, 606 E. 9th st
Wm. Balser, 218 E. 13th st
Wm. L. Bauer, 38 W. 40th st
L. Bolton Bangs, 31 E. 44th st
Elbert A. Banks, 70 W. 35th st
Justin L. Barnes, 5 E. 41st st
Charles C. Barrows, 7 E. 36th st
Josiah W. Barstow, 136 Lexington av
John L. Barton, 57 E. 55th st
Simon Baruch, 47 E. 60th st
Frederick M. Bauer, 225 E. 86th st
George Bayles, 408 Main st, Orange, New Jersey
Carl Beck, 187 2d av
Frank E. Beckwith, New Haven, Connecticut
Christopher M. Bell, 320 5th av
Albert C. Benedict, Yonkers, N. Y.
T. Passmore Berens, 104 W. 71st st
Henry W. Berg, 245 7th st
Edward J. Bermingham, 23 E. 46th st
Hermann M. Biggs, 58 E. 25th st
John H. Billings, 249 Madison av
Cornelius E. Billington, 106 Madison av
Wm. R. Birdsall, 144 E. 74th st
Joseph B. Bissell, 37 W. 50th st
Mark Blumenthal, 987 Madison av
Edward A. Bogue, 29 E. 20th st
Hermann J. Boldt, 51 W. 55th st
J. Arthur Booth, 419 Madison av
Rudolph O. Born, 163 W. 34th st
Francke H. Bosworth, 26 W. 46th st
Fred J. Bowles, 134 W. 93d st
Nathan Bozeman, 9 W. 31st st
Edward Bradley, 19 W. 30th st
Elizabeth N. Bradley, 45 E. 59th st
Laban B. Bradshaw, 154 E. 74th st
John W. Brannan, 54 W. 11th st
James A. Breakell, 249 W. 52d st

George E. Brewer, 118 Madison av
Wm. J. Brickelmaier, 41 W. 49th st
Charles K. Bridden, 13 E. 33d st
Nathan E. Brill, 865 Lexington av
E. L. Macomb Bristol, 373 West End avenue
Frederick J. Brockway, 345 W. 56th st
Edward B. Bronson, 123 W. 34th st
G. Frederick Brooks, 28 W. 32d st
Abram Brothers, 162 Madison st
Le Roy Brown, 104 W. 81st st
Charles H. Brown, 25 W. 45th st
Dillon Brown, 102 E. 57th st
F. Tilden Brown, 40 E. 31st st
Chas. E. Bruce, 456 Lexington av
Albert F. Brugman, 588 E. 141st st
Edward F. Brush, Mt. Vernon, N. Y.
Joseph D. Bryant, 54 W. 36th st
Augustus H. Bucknaster, 50 E. 59th st
Charles T. Buffum, 5 E. 29th st
L. Duncan Bulkley, 4 E. 37th st
Charles S. Bull, 47 W. 36th st
Wm. T. Bull, 35 W. 35th st
Wm. E. Bullard, 112 E. 49th st
Wm. M. Bullard, 302 Madison av
T. Hamilton Burch, 38 W. 38th st
Thomas H. Burchard, 7 E. 48th st
Martin Burke, 147 Lexington av
William J. Burnett, Long Island City, New York
Frederick A. Burrall, 48 W. 17th st
H. Hoyle Butts, 313 Madison av
Stephen S. Burt, 37 W. 32d st
John Byrne, 314 Clinton st, Brooklyn, N. Y.
John Cabot, 159 W. 48th st
Augustus Caillé, 185 2d av
Robert A. Caldwell, 24 W. 32d st
Peter A. Callan, 35 W. 38th st
Edward M. Cameron, 22 W. 47th st
Donald M. Cammann, 19 E. 33d st
Archibald M. Campbell, Mt. Vernon, New York.
John L. Campbell, 259 W. 42d st
Wm. C. Campbell, 259 W. 42d st
George F. Carey, 210 E. 17th st
Stuart B. Carlisle, Mt. Vernon, N. Y.
Albro R. Carman, 27 W. 127th st
Elon N. Carpenter, Mamaroneck, N.Y.
Walter L. Carr, 8 E. 28th st
Joseph S. Carreau, 41 E. 23d st
De Lancey Carter, 114 E. 85th st
Frederick A. Castle, 55 E. 52d st
Charles M. Cauldwell, 71 W. 55th st
Edwin R. Chadbourne, 31 W. 25th st
George W. Chamberlain, 439 Lexington av
Porter F. Chambers, 26 W. 47th st
Charles F. Chandler, 51 E. 54th st
Henry D. Chapin, 27 W. 51st st
Walter F. Chappell, 22 E. 42d st
Jean F. Chauveau, 31 W. 60th st
Hobart Cheesman, 328 W. 57th st
Timothy M. Cheesman, 46 E. 29th st
John H. Chisolm, Jr., 10 E. 28th st
W. Brewster Clark, 50 E. 31st st
Trumbull W. Cleveland, 242 W. 45th st
Clement Cleveland, 59 W. 38th st
George D. Clift, 109 E. 18th st
Titus M. Coan, 110 E. 56th st
Henry C. Coe, 27 E. 64th st
Lewis A. Coffin, 145 W. 12th st
Henry Coggeshall, 102 E. 57th st
Joseph Collins, 152 Lexington av
Felix Cohn, 20 W. 14th st
Carter S. Cone, 12 W. 40th st
Wm. B. Coley, 18 E. 32d st
Stacy B. Collins, Germantown, Philadelphia, Pa.
Herman L. Collyer, 109 E. 54th st
Frank Combes, 220 E. 112th st
George S. Conant, 148 E. 118th st
Harry B. Conrad, 102 E. 74th st
Stephen G. Cook, 111 W. 12th st
J. Leonard Corning, 53 W. 38th st
Edward O. Cowles, 629 Lexington av
Edward B. Cragin, 12 W. 50th st
Henry E. Crampton, 256 W. 124th st
Floyd McCrandall, 113 W. 95th st
George W. Creary, 152 W. 57th st
James King Crook, 128 Lexington av
Andrew F. Currier, 159 E. 37th st
Chas. G. Currier, 75 W. 55th st
B. Farquhar Curtis, 307 Madison av
H. Holbrook Curtis, 118 Madison av
Elizabeth M. Cushier, 53 E. 20th st
Wm. F. Cushman, 325 W. 22d st
Condict W. Cutler, 260 W. 57th st
John R. Cypert, 656 Lexington av
Alex. Dallas, 65 W. 36th st
Chas. L. Dana, 50 W. 46th st
Samuel W. Dana, 313 W. 33d st
Albert A. Davis, 119 E. 62d st
Robert H. M. Dawbarn, 345 W. 56th st
Wm. B. DeGarmo, 56 W. 36th st
Francis Delafield, 12 W. 32d st
D. Bryson Delavan, 1 E. 33d st
Edward B. Dench, 26 W. 46th st
Chas. E. Denhard, 90 Madison st
Frederic S. Dennis, 542 Madison av
Richard H. Derby, 9 W. 35th st
Leonard A. Dessar, 58 W. 49th st
S. Henry Dessau, 47 W. 56th st
Wm. Detmold, 38 E. 9th st

Robert J. Devlin, 156 W. 13th st
J. Harvey Dew, 352 W. 54th st
A. Britton Deynard, 352 W. 51st st
Robert L. Dickinson, 145 Clinton st, Brooklyn, N. Y.
Richard G. L. Dieffenbach, 224 E. 48th st
Frederick H. Dillingham, 636 Lexington av
Thomas Dimock, 152 Madison av
George A. Dixon, 15 W. 49th st
Frederick E. D'Oench, 12 E. 28th st
Wm. E. Dold, Boulevard and 116th st
John Dorning, 252 W. 25th st
Alvah H. Doty, 59 W. 36th st
John H. Douglas, Fordham, N. Y.
Orlando B. Douglas, 123 E. 36th st
Stuart Douglas, 35 W. 36th st
Chas. N. Dowd, 135 W. 73d st
Wm. H. Draper, 19 E. 47th st
Wm. K. Draper, 33 W. 39th st
A. Palmer Dudley, 640 Madison av
Wm. F. Duncan, 124 W. 39th st
Ghislani Durant, 12 W. 46th st
George M. Edebohls, 198 2d av
John H. Eden, 2456 Valentine av
James C. Edgar, 115 E. 35th st
Paul Ehrhart, 313 W. 30th st
Max Einhorn, 120 E. 64th st
Ellsworth Eliot, 48 W. 36th st
George R. Elliott, 48 E. 26th st
Wm. S. Ely, Rochester, N. Y.
John H. Emerson, 81 Madison av
Bache McE. Emmet, 18 E. 30th st
Thomas A. Emmet, 93 Madison av
Edward L. Estabrook, 78 Madison av
George A. Evans, 909 Bedford av, Brooklyn, N. Y.
Wm. A. Ewing, 134 W. 58th st
Henry A. Fairbairn, 213 McDonough st, Brooklyn, N. Y.
Warren A. Fanning, 115 W. 63d st
Joseph O. Farrington, 1991 Madison av
William H. Farrington, Astor House, Broadway and Vesey st
James F. Ferguson, 168 Lexington av
Jose M. Ferrer, 35 E. 31st st
Albert W. Ferris, 77 W. 45th st
Matthew D. Field, 112 E. 40th st
Louis Fisher, 40 Rivington st
Edward D. Fisher, 6 W. 39th st
Martin J. Fleming, 132 Lexington av
Francis Foerster, 228 W. 11th st
Willis E. Ford, Utica, N. Y.
John A. Fordyce, 66 Park av
William E. Forrest, 105 Waverly pl
Frank P. Foster, 16 E. 31st st
George V. Foster, 109 E. 18th st
Edward P. Fowler, 38 W. 40th st
George B. Fowler, 56 W. 50th st
George R. Fowler, 302 Washington av, Brooklyn, N. Y.
George H. Fox, 18 E. 31st st
Edward Frankel, 217 E. 17th st
Gustav Frauenstein, 359 W. 15th st
J. Gordon Frazer, 321 W. 35th st
George C. Freeborn, 200 W. 56th st
Rowland G. Freeman, 147 W. 57th st
Sarah A. French, 217 W. 34th st
Thomas R. French, 469 Clinton av, Brooklyn, N. Y.
Wolff Freudenthal, 1054 Lexington av
Albert H. Fridenberg, 216 E. 60th st
Edward Fridenberg, 2019 5th av
Alfred Friedman, 862 Lexington av
David Froehlich, 230 E. 49th st
J. Henry Fruitnight, 161 W. 57th st
Jacobs Fuhs, 237 Hewes st, Brooklyn, N. Y.
Eugene Fuller, 109 E. 34th st
Robert M. Fuller, 136 W. 42d st
Stephen E. Fuller, 77 Hanson place, Brooklyn, N. Y.
Guido Furman, 125 W. 73d st
Jasper J. Garmany, 64 W. 20th st
Henry J. Garrigues, 155 Lexington av
Arpad G. Gerster, 56 E. 25th st
Virgil P. Gibney, 16 Park av
William Gilfillan, 98 Remsen st, Brooklyn, N. Y.
Walter R. Gillette, 24 W. 40th st
William C. Gilliam, 12 W. 53d st
John H. Girdner, 31 W. 38th st
Joseph W. Gleitsman, 46 E. 25th st
Augustin H. Goelet, 351 W. 57th st
James R. Goffe, 22 E. 35th st
Herman Goldenburg, 20 E. 69th st
David H. Goodwillie, 160 W. 34th st
Orren A. Gorton, Sherburne, Chenango County, N. Y.
Wm. S. Gottheil, 25 W. 53d st
Egbert H. Grandin, 36 E. 58th st
Wm. D. Granger, Bronxville, N. Y.
Frank Grauer, 326 W. 46th st
Landon Carter Gray, 6 E. 49th st
Robert H. Greene, 105 W. 11th st
Wm. F. Greene, Mt. Vernon, N. Y.
Henry Griswold, 42 W. 35th st
Emil Gruening, 109 E. 23d st
Ramon Guiteras, 107 W. 54th st
John Habirshaw, 250 W. 57th st
Alexander Hadden, 155 E. 51st st
Edwards Hall, 17 E. 66th st

Wm. H. Hall, 129 E. 54th st
Silas F. Hallock, 136 E. 39th st
F. Spencer Halsey, 210 W. 59th st
Allen McLane Hamilton, 20 E. 29th st
Graeme M. Hammond, 58 W. 45th st
Irwin H. Hance, 441 Park av
Horace T. Hanks, 706 Madison av
Daniel Harrison, Whitestone, Long Island, N. Y.
George T. Harrison, 221 W. 23d st
James R. Hayden, 107 W. 55th st
George D. Hays, 324 E. 50th st
Henry N. Heinemann, 60 W. 56th st
Charles Heitzman, 39 W. 45th st
Louis Heitzmann, 39 W. 45th st
J. Julio Henna, 125 E. 25th st
Morris H. Henry, 581 5th av
Neil J. Hepburn, 369 W. 23d st
Fred C. Heppenheimer, 112 E. 57th st
Edgar M. Hermance, Yonkers, N.Y.
Everett Herrick, 126 Madison av
Christian A. Herter, 839 Madison av
Emil Heuel, 352 Willis av
Franz Heuel, Jr., 26 Irving pl
Charles F. Heywood, Pelhamville, Westchester Co., N. Y.
George B. Hickok, 167 W. 78th st
Thomas J. Hillis, 51 Charlton st
John H. Hinton, 41 W. 32d st
Joseph G. Hirons, 152 W. 45th st
Urban G. Hitchcock, 51 W. 26th st
Eugene Hodenpyl, 43 7th av
Abbott Hodgman, 141 E. 38th st
Edward J. Hogan, 308 Madison st
Wm. F. Hoicombe, 54 E. 25th st
Thomas H. Holgate, 206 W. 14th st
L. Emmett Holt, 15 E. 54th st
Oscar P. Honegger, 155 E. 72d st
George G. Hopkins, 390 Washington av, Brooklyn, N. Y.
J. Louis Hopkins, 233 W. 54th st
J. Swinburne Hopkins, 150 W. 124th st
George W. Hosmer, 174 W. 58th st
Robert T. Howe, Mt. Vernon, N. Y.
John T. Howell, Newburgh, N. Y.
Dwight L. Hubbard, 344 W. 33d st
George E. Hubbard, 257 W. 52d st
Leroy W. Hubbard, 161 W. 23d st
Samuel T. Hubbard, 27 W. 9th st
Francis Huber, 113 E. Broadway
Joseph J. Hull, 158 W. 34th st
Wm. A. Hume, 82 E. 79th st
George H. Humphreys, 23 E. 47th st
Joseph H. Hunt, Quincy st and Bedford av, Brooklyn, N. Y.
Alexander S. Hunter, 32 E. 29th st
Charles Hunter, Watkins, N. Y.
Dwight H. Hunter, 222 W. 73d st
Frederick E. Hyde, 20 W. 55th st
John A. Irwin, 14 W. 29th st
Frank L. Ives, 147 E. 36th st
Frank W. Jackson, 12 W. 18th st
George E. Jackson, 155th st and St. Nicholas av
George T. Jackson, 11 E. 31st st
Wm. H. Jackson, 556 Madison av
Abraham Jacobi, 100 W. 34th st
Mary Putnam Jacobi, 110 W. 34th st
Nathan Jacobson, Syracuse, N. Y.
Arthur M. Jacobus, 126 W. 48th st
George W. Jacoby, 100 E. 57th st
Walter B. James, 33 W. 39th st
Edward H. James, 57 W. 55th st
Edward G. Janeway, 36 W. 40th st
Joseph E. Janvrin, 191 Madison av
George W. Jarman, 27 E. 64th st
Wm. C. Jarvis, 142 Madison av
Charles Jewett, 307 Gates av, Brooklyn, N. Y.
John G. Johnson, 153 Joralemon st, Brooklyn, N. Y.
Lawrence Johnson, 333 W. 28th st
Charles N. D. Jones, 163 De Kalb av, Brooklyn, N. Y.
Israel C. Jones, Fordham, N. Y.
S. Seabury Jones, 809 Lexington av
Wm. W. Jones, 51 W. 28th st
Adoniram B. Judson, 4 E. 25th st
Champion H. Judson, Dobbs Ferry, N. Y.
Kenneth F. Junor, 160 W. 29th st
Moses S. Kakeles, 243 E. 49th st
Richard Kalish, 50 W. 36th st
Frederick Kammerer, 667 Madison av
Wm. H. Katzenbach, 22 W. 45th st
Thomas J. Kearney, 126 E. 29th st
Theodore H. Kellogg, Hudson River State Hospital, Poughkeepsie, N.Y.
James Edward Kelly, 16 E. 29th st
Charles B. Kelsey, 25 Madison av
Wm. M. Kemp, 267 W. 23d st
Edward Kershner, Surgeon United States Navy, 2 Chambers st
Samuel Kets, 328 W. 24th st
Edward L. Keyes, 1 Park av
Emil B. Kinnicutt, 20 W. 47th st
Francis P. Kinnicutt, 42 W. 37th st
Gustav A. Kletsch, 34 E. 60th st
Herman G. Klotz, 42 E. 22d st
Gideon L. Knapp, 42 W. 21st st
Hermann Knapp, 25 W. 24th st
John B. Knapp, 62 W. 51st st
Charles H. Knight, 20 W. 31st st
George Knipe, 354 W. 24th st
Samuel Kohn, 219 Second av

Henry Koplik, 175 E. 70th st
Carl F. Kremer, 112 E. 57th st
Wm. H. Kretzschmar, 2770 Fulton st
Henry Krollpfeiffer, 48 St. Mark's pl
Florian Krug, 13 E. 41st st
Louis J. Ladinski, 248 E. Broadway
Edward W. Lambert, 2 E. 37th st
Samuel W. Lambert, 2 E. 37th st
Fred E. Lange, 130 E. 61st st
Gustav Langmann, 131 W. 57th st
James R. Latham, 131 W. 11th st
Charles A. Leale, 604 Madison av
James R. Leaming, 18 W. 38th st
Wm. G. Le Boutillier, Raquette Lake, N. Y.
Charles C. Lee, 79 Madison av
Egbert Le Fevre, 161 W. 23d st
George M. Lefferts, 6 W. 33d st
Simeon N. Leo, 103 W. 55th st
George W. Leonard, 107 W. 73d st
Wm. R. Leonard, 463 W. 21st st
Adolph M. Lesser, 713 Lexington av
Wm. M. Leszynsky, 61 E. 75th st
Frederick J. Leviseur, 640 Madison av
Charles H. Lewis, 18 W. 61st st
Daniel Lewis, 249 Madison av
Frederick W. Lilienthal, 306 E. 15th st
Howard Lilienthal, 33 E. 31st st
Rufus P. Lincoln, 22 W. 31st st
Chas. I. Lindley, 85 Madison av
Watts C. Livingston, 357 W. 35th st
Hersey G. Locke, 66 W. 38th st
Samuel Lloyd, 24 W. 50th st
Arthur V. B. Lockrow, 7th av and 122d st
Charles E. Lockwood, 59 W. 36th st
George R. Lockwood, 30 E. 36th st
Alfred L. Loomis, 19 W. 34th st
Henry P. Loomis, 58 E. 34th st
Wm. T. Lusk, 47 E. 34th st
Patrick J. Lynch, 216 E. 13th st
Samuel B. Lyon, Boulevard and 116th st
Samuel K. Lyon, 312 2d av
Frederick A. Lyons, 340 Lexington av
Charles McBurney, 40 W. 36th st
John A. McCorkle, 149 Clinton st, Brooklyn, N. Y.
Andrew J. McCosh, 600 Madison av
John A. McCreery, 350 Lexington av
Alexander E. McDonald, City Asylum (Ward's Island)
George A. McDonald, 273 7th st
Timothy J. McGillicuddy, 125 E. 83d st
E. L. H. McGinnis, 55 W. 33d st
James R. MacGregor, 1035 Madison av
Burnett C. McIntyre, 321 W. 4th st
William McKay, 40 E. 10th street
W. Duncan McKim, 751 Madison av
James W. McLane, 51 W 38th st
William M. McLaury, 244 W. 42d st
Malcolm McLean, 29 E. 126th street
Samuel B. Wylie McLeod, 247 W. 23d st
John B. McMahon, 266 E. Broadway
Nathaniel G. McMaster, 322 E. 15th st
George McNaughton, 227 Greene av, Brooklyn, N. Y.
Sarah J. McNutt, 265 Lexington av
Henry A. Mandeville, 24 W. 40th st
Morris Manges, 941 Madison av
Thomas H. Manley, 302 W. 53d st
Francis H. Markoe, 20 W. 30th st
James W. Markoe, 20 W. 30th st
Thomas M. Markoe, 20 W. 30th st
Wilbur B. Marple, 29 W. 31st st
Lewis D. Mason, 171 Joralemon street, Brooklyn, N. Y.
R. Osgood Mason, 348 W. 58th st
Jansen B. Mattison, 185 Brooklyn avenue, Brooklyn, N. Y.
Elijah A. Maxwell, 214 E. 50th st
Charles H. May, 640 Madison av
Calvin S. May, 205 W. 57th st
Emil Mayer, 238 E. 116th st
Alfred W. Maynard, 264 W. 42d st
Walter Meudelson, 179 W. 74th st
Frank W. Merriam, 11 Charlton st
Abraham Meyer, 245 E. 48th st
Alfred Meyer, 749 Madison av
Willy Meyer, 700 Madison av
Robert Milbank, 154 W. 48th st
Henry B. Millard, 4 E. 41st st
Charles Milne, 121 E. 45th st
John C. Minor, 10 E. 41st st
Ramon L. Miranda, 318 W. 29th st
Hubbard W. Mitchell, 747 Madison av
William F. Mittendorf, 140 Madison avenue
Henry Moeller, 240 W. 38th st
Henry Moffat, 89 Ashburton avenue, Yonkers, N. Y.
Joseph A. Monell, 236 W. 22d st
W. Oliver Moore, 85 Madison av
Benjamin Morjé, 181 E. 71st st
Lewis R. Morris, 35 W. 36th st
Robert T. Morris, 133 W. 34th st
Stuyvesant F. Morris, 16 E. 30th st
P. Albert Morrow, 66 W. 40th st
W. Golden Mortimer, 612 Lexington av

William J. Morton, 19 E. 28th st
Gustave Mourraille, 54 W. 12th
Paul F. Mundé, 20 W. 45th st
John P. Munn, 18 W. 58th st
George E. Munroe, 43 E. 33d st
Frank W. Murray, 38 W. 56th st
Robert A. Murray, 235 W. 23d st
T. Halsted Myers, 24 W. 50th st
Robert C. Myles, 25 W. 36th st
Charles E. Nammack, 244 Madison st
George G. Needham, 218 E. 19th st
William B. Neftel, 16 E. 48th st
Albert W. Neufeld, 237 E. Broadway
James E. Newcomb, 131 W. 61st st
Albert S. Newcombe, 139 W. 42d st
James A. Nichols, 133 W. 34th st
James E. Nichols, 456 Lexington av
Truman Nichols, 267 E. Broadway
Henry D. Nicoll, 51 E. 56th st
Jonas R. Nilson, 9 E. 53d st
John G. Noble, 222 W. 34th st
Henry S. Norris, 123 W. 34th st
Wm. P. Northrup, 57 E. 79th st
Henry D. Noyes, 233 Madison av
Joseph O'Dwyer, 967 Lexington av
Robert Offenbach, 825 Lexington av
Frank W. Olds, 44 W. 71st st
Henry S. Oppenheimer, 49 E. 23d st
Isaac Oppenheimer, 68 E. 67th st
Fessenden N. Otis, 5 W. 50th st
Wm. K. Otis, 5 W. 50th st
Charles W. Packard, 447 Park av
R. Channing M. Page, 31 W. 33d st
Charles I. Pardee, 34 W. 38th st
Roswell Park, Buffalo, N. Y.
W. H. Park, 128 W. 11th street
Willard Parker, 55 Fifth avenue
John Parsons, Kingsbridge, N. Y.
Ralph L. Parsons, Sing Sing, N. Y.
Edward L. Partridge, 19 5th av
Frank N. Patterson, 126 E. 34th st
George L. Peabody, 57 W. 38th st
Daniel P. Pease, Hoffman House, Broadway and 25th street
Edward H. Peaslee, 29 Madison av
Edward S. Peck, 53 W. 50th st
Grace Peckham, 25 Madison av
Henry T. Peirce, 272 Lenox av
James L. Perry, 79 W. 47th st
John G. Perry, 48 E. 34th st
George A. Peters, 45 W. 35th st
John C. Peters, East Williston, L. I., New York
Frederick Peterson, 201 W. 54th st
Alfred G. Pfeiffer, 236 E. 53d st
Abel M. Phelps, 40 W. 34th st
Charles Phels, 34 W. 37th st
Wendell C. Phillips, 161 E. 37th st
Henry G. Pitfard, 19 W. 35th st
Wm. M. Polk, 7 E. 36th st
Sigismund Pollitzer, 21 W. 52d st
Oren D. Pomeroy, 316 Lexington av
Thomas R. Pooley, 107 Madison av
Charles T. Poore, 5 W. 30th st
Alexander B. Pope, 126 W. 45th st
W. Evelyn Porter, 39 W. 33d st
Wm. Henry Porter, 1674 Broadway
Seneca D. Powell, 12 W. 40th st
Charles A. Powers, 35 W. 35th st
Jonathan S. Prout, 26 Somermerhorn st, Brooklyn, N. Y.
T. Mitchell Prudden, 23 W. 33d st
Wm. R. Pryor, 15 Park av
Alfred E. M. Purdy, 304 Madison av
Samuel S. Purple, 36 W. 23d st
Leopold Putzel, 13 E. 57th st
John D. Quackenbos, 331 W. 28th st
Charles E. Quinlby, 44 W. 36th st
Francis J. Quinlan, 54 W. 17th st
Edward Quintard, 58 W. 36th st
George W. Radde, 125 E. 19th st
Edwin D. Ramsdell, 158 E. 33d st
Ambrose L. Ranney, 156 Madison av
Fred. M. Ranney, 317 W. 29th st
Leonard S. Rau, 72 W. 55th st
Ira B. Read, 66 E. 126th st
John J. Reid, 853 Lexington av
Meyer L. Rhein, 104 E. 58th st
Archibald C. Rhoades, 142 W. 44th st
Clarence C. Rice, 125 E. 19th st
Montrose R. Richards, 77 E. 116th st
Charles H. Richardson, 427 Lexington av
John Ridlon, 337 W. 57th st
Frederick C. Riley, 38 E. 26th st
Frank W. Ring, 101 Park av
John H. Ripley, 605 Lexington av
Milton J. Roberts, 160 W. 58th st
Nathan S. Roberts, 804 Lexington av
Andrew R. Robertson, 248 W. 42d st
Beverley Robinson, 37 W. 35th st
Thomas M. Rochester, 2 St. James pl., Brooklyn, N. Y.
Alphonso D. Rockwell, 113 W. 34th st
Louis A. Rodenstein, 908 St. Nicholas av
Willard H. Rogers, 225 W. 22d st
Stephen W. Rood, 227 W. 23d st
D. B. St. John Roosa, 20 E. 20th st
J. West Roosevelt, 32 E. 31st st
Alvah Rowe, 349 W. 34th st
Julius Rudisch, 121 E. 60th st
Adolph Rupp, 406 W. 34th st
Gustavus A. Sabine, 8 E. 24th st
Bernard Sachs, 142 E. 61st st
Louis E. Sass, 36 W. 30th st
F. Le Roy Satterlee, 5 W. 18th st
Thomas E. Satterthwaite, 17 E. 44th st

Lewis A. Sayre, 285 Fifth av
Reginald H. Sayre 285 Fifth av
Alois Schapringer, 130 E. 59th st
Barnim Scharlau, 66 W. 35th st
John Schmitt, 125 Second av
Charles P. R. Schoenemann, 340 Lexington av
Henry Schweig, 26 E. 20th st
George Scott, 640 Madison av
Charles D. Scudder, 1 E. 33d st
Henry H. Seabrook, 118 E. 72d st
Louis L. Seaman, 18 W. 31st st
William S. Seamans, 16 W. 57th st
Edward C. Seguin, 419 Madison av
August G. Seibert, 137 E. 19th st
Edward H. M. Sell, 44 W. 49th st
Frederick S. Sellew, 61 E. 79th st
Samuel Sexton, 12 W. 35th st
Newton M. Shaffer, 28 E. 38th st
Eden S. D. Shaw, 44 W. 31st st
Samuel Sherwell, 33 Schermerhorn st, Brooklyn, N. Y.
George P. Shirmer, 359 W. 42d st
George F. Shrady, 8 E. 66th st
John Shrady, 149 W. 126th st
Albert Shunk, 341 W. 32d st
Henry M. Silver, 39 7th st
Chas. E. Simmons, 742 Lexington av
Wm. K. Simpson, 952 Lexington av
H. Marion Sims, 4 W. 47th st
Frank D. Skeel, 361 Mott av
Alexander J. C. Skene, 167 Clinton st, Brooklyn, N. Y.
Abram A. Smith, 40 W. 47th st
Andrew H. Smith, 22 E. 42d st
George De F. Smith, 20 E. 29th st
Gouverneur M. Smith, 14 E. 17th st
J. Lewis Smith, 64 W. 56th st
Oscar G. Smith, 130 Washington pl
Stephen Smith, 574 Madison av
S. Hanbury Smith, 39 W. 4th st
Samuel W. Smith, 24 W. 30th st
George A. Spalding, 248 Lenox av
Lewis H. Spanhake, 244 E. 13th st
H. Draper Speakman, 154 Madison av
James D. Spencer, Watertown, N. Y.
S. Fleet Spier, 162 Montague st., Brooklyn, N. Y.
M. Allen Starr, 22 W. 48th st
Henry S. Stearns, 21 E. 44th st
Thomas L. Stedman, 140 Madison av
Alexander W. Stein, 30 W. 15th st
Wm. Stevens, 133 W. 41st st
Douglas H. Stewart, 111 W. 64th st
Charles W. Stimson, 68 W. 40th st
Daniel M. Stimson, 11 W. 17th st
Lewis A. Stimson, 34 E. 33d st
Enoch V. Stoddard, Rochester, N. Y.
Gustav M. Stoeckel, 361 W. 42d st
Wm. M. Stowell, 136 E. 18th st
A. Russell Strachan, 25 E. 30th st
W. Stratford, 245 W. 52d st
Francis H. Stuart, 123 Joralemon st, Brooklyn, N. Y.
Wm. Stubenbord, 319 W. 37th st
Frederic R. Sturgis, 16 W. 32d st
A. Walter Suiter, Herkimer, N. Y.
Fremont Swain, 148 W. 49th st
Wm. F. Swalm, 118 Lafayette av., Brooklyn, N. Y.
John H. Swasey, 34 E. 28th st
Edwin E. Swift, Hotel Endicott, 81st st and Columbus av
George M. Swift, 29 E. 31st st
Samuel Swift, Yonkers, N. Y.
Wm. J. Swift, 40 E. 30th st
George K. Swinburne, 837 Seventh av
Ralph E. Swinburne, 128 W. 126th st
Brandreth Symonds, 1 Tompkins av, New Brighton, Staten Island, N. Y.
Parker Syms, 55 W. 36th st
Charles F. Taylor, 201 W. 54th st
Henry L. Taylor, 201 W. 54th st
James R. Taylor, 234 E. 12th st
Robert W. Taylor, 40 W. 21st st
Allen M. Thomas, 64 W. 50th st
T. Gaillard Thomas, 600 Madison av
Wm. G. Thompson, 49 E. 30th st
Wm. H. Thomson, 7 W. 56th st
Wm. Thurman, 107 W. 86th st
Franz J. A. Torek, 164 E. 79th st
Wm. R. Townsend, 16 Park av
Arthur B. Townshend, 22 W. 32d st
E. Clark Tracy, 30 E. 126th st
Roger S. Tracy, 74 W. 46th st
Edw. L. Trudeau, Saranac Lake, N. Y.
Carlos P. Tucker, 43 W. 26th st
George M. Tuttle, 49 W. 38th st
James P. Tuttle, 35 W. 45th st
Henry H. Tyson, Jr., 47 W. 51st st
Wm. W. Van Arsdale, 207 W. 56th st
Edward Vander Poel, Fort Lee, N. J.
John Van der Poel, 36 W. 39th st
S. Oakley Vander Poel, 47 E. 25th st
Waldron B. Vanderpoel, 186 E. 24th st
Ira Van Gieson, 94 Kent st, Brooklyn, N. Y.
Moses D. Van Pelt, 153 W. 128th st
Richard Van Santvoord, 106 W. 122d st
Wm. W. Van Valzah, 10 E. 43d st
Horace C. Vandenbergh, 356 Lexington av
Edward H. Van Winkle, 25 W. 9th st
Francis Valk, 163 E. 37th st
Maus R. Vedder, 690 Madison av
Hiram N. Vinberg, 167 E. 61st st
Cæsar A. Von Ramdohr, 105 7th st
Walter Vought, 12 W. 10th st

Clinton Wagner, 107 Madison av
Ralph Waldo, 72 W. 45th st
Louis Waldstein, 450 Madison av
D. Ernest Walker, 215 W. 43d st
Henry F. Walker, 8 E. 30th st
L. Pope Walker, 25 E. 24th st
Wm. Wallace, 183 Congress st, Brooklyn, N. Y.
Joseph G. Wallach, 7 E. 82d st
Josephine Walter, 101 W. 75th st
Edwin F. Ward, 23 W. 36th st
Everett S. Warner, 117 E. 26th st
John W. Warner, 107 E. 72d st
John Warren, 47 E. 30th st
John S. Warren, 204 W. 38th st
Z. Swift Webb, 342 W. 33d st
Leonard Weber, 25 W. 46th st
David Webster, 266 Madison av
John E. Weeks, 150 Madison av
Robert F. Weir, 37 W. 33d st
Julius Weiss, 329 W. 28th st
Faneuil D. Weisse, 46 W. 20th st
Brooks H. Wells, 71 W. 45th st
Edmund C. Wendt, 712 Madison av
Frank E. West, 29 Schermerhorn st, Brooklyn, N. Y.
Benjamin F. Westbrook, 174 Clinton st, Brooklyn, N. Y.
George G. Wheelock, 75 Park av
Charles B. White, 107 W. 72d st
Granville M. White, 227 West End av
J. Blake White, 1013 Madison av
Octavius A. White, 1011 Madison av
Wm. T. White, 130 E. 59th st
Royal Whitman, 126 W. 59th st
Joseph Wiener, 150 E. 61st st
Rudolph G. Wiener, 48 E. 65th st
Frederic H. Wiggin, 55 W. 36th st
Reynold W. Wilcox, 690 Madison av
Mark H. Williams, 227 W. 135th st
Herbert F. Williams, 363 Grand av, Brooklyn, N. Y.
Gustavus S. Winston, 42 W. 39th st
Joseph E. Winters, 36 W. 32d st
Rudolph A. Witthaus, 61 Fifth av
Charles S. Wood, 137 W. 47th st
Wm. B. Wood, 22 E. 41st st
J. McGaw Woodbury, 28 W. 20th st
George Woolsey, 49 E. 30th st
Jonathan Wright, 73 Remsen st, Brooklyn, N. Y.
J. Williston Wright, 53 W. 19th st
Frederick W. Wunderlich, 165 Remsen st, Brooklyn, N. Y.
John A. Wyeth, 294 Madison av
Robert H. Wylie, 215 W. 43d st
W. Gill Wylie, 40 W. 40th st
Leroy M. Yale, 432 Madison av
Wm. Young, Cold Spring, Putnam Co., N. Y.
Adolph Zeh, 343 W. 50th st

Number of Resident Fellows, 752.

MEDICAL SOCIETY OF THE COUNTY OF NIAGARA.

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in January; quarterly, first Tuesday in April and September.

Officers. (June, 1892.)

E. N. S. Ringueberg, *President.* J. Ready, *Vice President.*
W. P. Sawyer, *Secretary.* John Foot, *Treasurer.*

Censors: Wm. B. Gould, T. B. Cosford, E. J. Baker,
Walter McChesney. H. A. Wilmot.

Committee on Hygiene:

M. S. Kittinger, *Chairman.* A. G. Skinner, A. N. Moore,
H. A. Wilmot, T. B. Cosford, M. L. Lang,
J. I. McFadden, F. J. Baker, J. W. Corman, W. Q. Huggins.

Delegates to State Medical Society: F. J. Baker, C. M. Palmer.

Members.

F. J. Baker, Lockport
Lafayette Balcolm, Lockport
J. W. Bickford, Lockport
Gardiner C. Clark, Niagara Falls
J. W. Cole, Newfane
J. W. Corman, Beach Ridge
T. B. Cosford, Lockport
G. W. Eddy, Lewiston
Peter Faling, Gasport
W. J. Falkner, Youngstown
E. J. Foote, Lockport
John Foote, Lockport

F. Gaskill, Wilson
W. B. Gould, Lockport
J. B. Hartwell, Lockport
J. H. Helmer, Lockport,
H. C. Hill, Lockport
W. H. Hodson, Lockport
W. Q. Huggins, Sanborn
M. S. Kittinger, Lockport
M. L. Lang, Suspension Bridge
W. H. Loomis, ———
Walter McChesney, Tonawanda
J. McFadden, Olcott
B. I. Manchester, Royalton
A. N. Moore, Rapids Bridge
D. H. Murphy, Royalton
C. N. Palmer, Lockport
W. J. Ransom, Lockport
Wm. C. Raymond, Cambria
W. B. Rice, Lockport
E. N. S. Ringueberg, Lockport
W. P. Sawyer, ———
C. P. Schmitt, Tonawanda
C. H. Turner, Hartland
H. A. Wilmot, Middleport
W. C. Wood, Lockport

Number of Members, 37.

Deceased: Simeon T. Clark, Lockport, December 24, 1891, æt. 55; A. G. Skinner, Youngstown.

Removed: R. M. Elliott, of Gasport, to Rochester.

MEDICAL SOCIETY OF THE COUNTY OF ONEIDA.

MEETINGS.—Annual, second Tuesday in July; semi-annual, second Tuesday in January; quarterly, second Tuesday in October and April. The semi-annual meeting is held in Rome; the others in Utica.

Officers. (July, 1891.)

A. W Marsh, *President.* William M. Gibson, *Vice-President.*
J. G. Kilbourn, *Secretary.* H. G. Jones, *Treasurer.*
W. H. Booth, *Librarian.*

Censors: W. M. Towsley, Claude Wilson, F. E. Barrows,
Mathias Cook, Thomas G. Nock, Myron W. Hunt.

Committee on Hygiene: J. G. Hunt, W. M. Towsley, M. W. Hunt,
T. G. Nock, T. Z. Jones.

Delegates to State Medical Society: W. H. Booth, W. M. Gibson,
H. S. Quinn.

Members.

(Where no town is mentioned Utica is to be understood.)

E. P. Abbott, Oriskany
C. E. Atwood, Bloomingdale Hospital
Charles G. Bacon, Camden
Smith Baker, Rowland's building
M. M. Bagg, 6 Pearl st
D. A. Barnum, Cassville
F. M. Barrows, Clinton
F. E. Barrows, Detroit, Mich.
H. G. Bartlett, Oriskany Falls
Thomas J. Bergin, 93 John st
David Besee, Utica
G. Alder Blumer, State Hospital
W. H. Booth, Rowland's building
A. J. Browne, Carlile building
W. H. Brownell, Utica
Wales Buell, Walesville
W. A. Burgess, 238 Genesee st
Martin Cavana, Oneida, Madison Co
J. K. Chamberlayne, 1 Steuben park
Alonzo Churchill, Parker block
E. P. Clark, Utica
Wallace Clark, 136 Park av
Ira M. Comstock, New York Mills
J. B. Cooke, New York City
Mathias Cook, 92 Columbia st
T. H. Cox, Lee Centre
Delos A. Crane, Utica
R. R. Daly, State Hospital
M. J. Davies, Utica
A. P. Dodge, Oneida Castle
C. V. J. Doolittle, Bridgewater
James W. Douglas, Boonville
H. G DuBois, Camden
W. C. Duke, Forestport
D. C. Dye, Carlile building
Eliza M. Ellenwood, Rome

G. P. English, Boonville
S. Eynon, Utica
Thomas M. Flandreau, Rome
W. E. Ford, 266 Genesee st
Charles E. Fraser, Rome
Charles E. Fraser, Jr., Rome
Jefferson C. Fraser, Lee
Conway Frost, Clinton
Earl D. Fuller, 148 Columbia st
F. A. Gary, Vernon
W. C. Gibson, Utica
Wm. M. Gibson, 260 Genesee st
A. A. Gillette, Westernville
J. H. Glass, 246 Genesee st
Francis T. Gorton, Waterville
W. W. Gray, Auburn
W. R. Griswold, New Hartford
Joseph V. Harberer, 66 Miller st
C. R. Hart, New Hartford
W. J. Harter, Utica
Thomas Hays, Deerfield, office Utica
Robert H. Hews, North Western
A. L. Holden, 132 South st
Ira D. Hopkins, 25 Blandina st
Henry R. Hughes, Clinton
J. G. Hunt, 192 Genesee st
Myron W. Hunt, Holland Patent
E. M. Hyland, 221 Genesee st
Wm. M. James, 166 Genesee st
Herbert G. Jones, Carlile building
J. D. Jones, Rowland's building
James E. Jones, Clayville
H. W. Jones, Waterville
L. H. Jones, Utica
M. B. Jones, Camden
Thomas Z. Jones, Waterville
Judson G. Kilbourn, 224 Genesee st
George A. Krug, 220 Bleeker st
William Kuhn, Rome
E. J. Lawton, Rome
Joseph I. Lindsay, Clayville
Wm. Mahon, State Hospital
James McCullough, Remsen
Juliette E. Marchant, Rome
W. R. Marsden, Utica
A. W. Marsh, Oriskany Falls
S. C. Maxson, Utica
G. Leroy Menzie, Vernon
Charlotte L. Merrick, Utica
James Middleditch, Rome
T. M. Miller, Deerfield
Charles Munger, Knoxboro
William H. Nelson, Taberg
H. Nicholas, North Bay
Thomas G. Nock, Jr., Rome
John B. Nold, Utica
L. F. Pattingill, 221 Genesee st
H. C. Palmer, 253 Genesee st
W. B. Palmer, 30 South st
F. H. Peck, Clinton
Johnson Pillmore, Delta
G. J. Pollard, Oriskany Falls
Medina Preston, Sangerfield
Hamilton S. Quinn, 238 Genesee st
William S. Ralph, 26 Court st
Edwin W. Raynor, Horsey block
C. C. Reid, Rome
H. G. Reid, Westonville
Lafayette Rinkle, Boonville
D. H. Roberts, Trenton
J. Ross, Utica
Chas. P. Russell, 196 Genesee st
W. D. Russell, New Hartford
W. J. Schuyler, 266 Genesee st
Geo. Seymour, 227 Genesee st
H. E. Shumway, Utica
A. R. Simmons, 224 Genesee st
Hugh Sloan, 142 Columbia st
A. H. Smith, Camden
Chas. E. Smith, Whitestown
Edward J. Stevens, 183 Genesee st
Henry C. Sutton, Rome
R. E. Sutton, Rose
Charles W. Shaver, Florence
L. Swarthout, Prospect
Chas. B. Tefft, Arcade building
Louis A. Tourtellot, 40 Broad st
Wm. M. Towsley, Camden
F. P. Utley, Deansville
T. A. Vedder, 29 Oneida st
Chas. G. Wagner, Binghamton State Hospital
Charles G. Ward, Utica
Charles R. Weed, 226 Genesee st
Joseph E. West, 379 Genesee st
W. E. Wetmore, Utica
E. G. Williams, Remsen
Claude Wilson, Waterville
Hiram K. Worden, Westmoreland

Number of Members, 137.

Deceased: A. A. Barrows, Clinton; Edwin Evans, Rome; M. C. West Rome, October 20, 1891, æt. 57.

MEDICAL SOCIETY OF THE COUNTY OF ONONDAGA.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, last Tuesday in January; quarterly, at such intermediate times as the Society may direct. All meetings are held in Syracuse.

Officers. (June, 1892.)

F. W. Sears, *President.* N. Wilbur, *Vice-President.*
D. H. Murray, *Secretary.* Margaret Stanton, *Treasurer.*

Delegates to State Medical Society: J. W. Brown, U. H. Brown, John Van Duyn.

Members.

(Where the town is not mentioned Syracuse is to be understood.)

Robert Aberdein, 2 Greeley block
Henry A. Allen, Baldwinsville
W. J. Ayling, 318 Mulberry st
Levi Bartlett, Skaneateles
Theresa Baunan, 503 Warren st
A. C. Benedict, 334 Montgomery st
Charles H. Benson, 902 Montgomery st
C. E. Billington, 301 East Fayette st
Wm. B. Breed, 110 Ash st
G. L. Brown, Euclid
U. Higgins Brown, 312 Warren st
John W. Brown, Mottville
F. H. Butler, 204 Seymour st
A. J. Campbell, 333 Warren st.
James E. Carr, Jordan
H. A. Cavenor, Camillus
B. F. Chase, East Syracuse
G. P. Clark, 452 South Salina st
Frank R. Coe, Warners
J. H. Coe, 804 East Genesee st.
Allen Cone, Elbridge
Geo. W. Cook, 8 Greyhound building
J. C. Corson, State Asylum
S. Boyce Craton, 314 Clinton st
A. J. Dallas, 340 Warren st
Charles N. Daman, 621 E. Genesee st
L. P. Deming, 332 Montgomery st
O. G. Dibble, Pompey
H. D. Didama, 424 South Salina st
F. O. Donohue, 314 South Clinton st
Gregory Doyle, 307 West Genesee st
J. P. Dunlap, 408 E. Genesee st
Wm. H. Dwinell, Tully
Thomas B. Dwyer, 624 Harison st
A. S. Edwards, 1506 North Salina st
G. A. Edwards, 352 Warren st
S. G. Ellis, 419 Irving st
H. L. Elsner, 516 Prospect av.
M. B. Fairchild, 1305 N. Salina st
J. W. Fry, 1 Griffin block, Lock st
T. F. Halstead, 452 S. Salina st
Juliet E. Hanchett, 601 Warren st
R. C. Hanchett, 3 Joy building
Carrie A. Hatch, 110 Onondaga st
A. D. Head, 202 E. Genesee st
George T. Head, 107 W. Kenedy st
C. E. Heaton, Baldwinsville
J. L. Heffron, 910 N. Salina sl
Mrs. E. J. Holcomb, 501 E. Fayette st
Nathan Jacobson, 430 S. Salina st
W. R. Johnson, 19 Yates block
Joel G. Justin, 501 E. Fayette st
D. A. Kellogg, Navarino
J. V. Kendall, Baldwinsville
George R. Kinne, 626 Hifford st
J. W. Knapp, Geddes
Jonathan Kneeland, South Onondaga
Charles E. McClary, 202 S. Avenue
R. C. McLennan, 108 S. Salina st
Daniel McNamara, 243 W. Genesee st
F. W. Marlow, 117 E. Jefferson st
Edwin R. Maxson, 818 Madison st
Wm. H. May, 800 E. Fayette st
W. H. Maynard, 358 Delaware st
Alfred Mercer, 324 Montgomery st
A. Clifford Mercer, 324 Montgomery st
H. D. Merwin, Cicero
A. B. Miller, 416 S. Salina st
E. L. Mooney, 202 W. Fayette st
J. A. Mowris, Lafayette
J. F. Munn, Warren st
W. W. Munson, Otisco
E. S. Mumford, 513 E. Fayette st
D. H. Murray, 717 Catharine st
Horace Nims, Manlius
Amelia D. Nivin, 428 S. Salina st
Scott Owen, 223 Montgomery st
Israel Parsons, Marcellus
H. H. Pease, 320 Montgomery st
W. T. Plant, 222 Harrison st
J. D. Potter, Delphi
George M. Price, 720 Butternut st

H. B. Pritchard, Cicero
A. B. Randall, Liverpool
C. S. Roberts, 7 Clinton place
John H. Robson, Elbridge
Arthur B. Rood, Manlius station
M. G. Rood, Onondaga
Joseph C. Roth, 435 Gifford st
Mrs. E. H. Runion, 303 E. Onondaga st
E. S. Sampson, North Syracuse
L. A. Saxer, 514 Prospect av
I. H. Searl, 401 Warren st
F. W. Sears, 326 Montgomery st
J. P. Shumway, 5 Emerson av
E. C. Skinner, E. Syracuse
I. M. Slingerland, Fayetteville
F. W. Slocum, Camillus
Clara Smith, 503 Warren st
F. W. Smith, S. W. cor. Gifford st
Wm. Manlius Smith, 138 Holland st
S. F. Snow, 117 E. Jefferson st
Margaret Stanton, 217 Montgomery st
F. H. Stephenson, 307 Warren st.
F. A. Strong, Brewerton
O. A. Thomas, 813 S. Salina st
H. P. Tolman, Onondaga Valley
D. M. Totman, 303 Montgomery st
A. F. Vadeboncoeur, 354 Greene st
Van Dyke Tripp, Borodino
Eli Van De Warker, 404 Genesee st
John Van Duyn, 427 S. Salina st
W. P. Warner, 455 S. Salina st
Lewis F. Weaver, 121 Green st
H. A. Weed, Jordan
Walter J. Werfleman, 563 N. Salina st
James Whitford, Onondaga Valley
R. A. Whitney, Liverpool
Hiram Wiggins, Elbridge
N. Wilbur, Fayetteville
B. P. Wright, Furnace st
C. F. Wright, 405 Warren st
H. B. Wright, Skaneateles

Number of Members, 123.

Honorary Member: Rev. E. G. Bush, Syracuse.

Deceased: J. H. Graves, Syracuse; J. O. Longstreet, Lafayette.

MEDICAL SOCIETY OF THE COUNTY OF ONTARIO.

MEETINGS.—Annual, second Tuesday in July; quarterly, second Tuesday in October, January, and April.

(This County Society has not communicated with the State Society since 1884.)

Members.

A. D. Allen, Gorham
D. S. Allen, Hall's Corners
J. H. Allen, Gorham
A. L. Behan, Canandaigua
B. F. Bennett, Canandaigua
F. R. Bently, Cheshire
D. R. Burrell, Canandaigua
M. R. Carson, Canandaigua
W. M. Cheney, West Bloomfield
H. K. Clarke, Geneva
A. G. Cruttenden, Clifton Springs
J. F. Draper, Victor
H. M. Eddy, Geneva
G. E. Flood, Geneva
G. S. Gallagher, Naples
N. E. Grene, Honeoye
O. B. Hallenbeck, Canandaigua
J. B. Hays, Canandaigua
W. S. Hicks, Bristol
E. O. Hollister, East Bloomfield
John Hutchins, Cheshire
C. O. Jackson, Victor
J. H. Jewett, Canandaigua
F. W. Mailler, Phelps
D. J. Mallery, Bristol
A. M. Mead, Victor
M. W. Nichols, Canandaigua
M. H. Picot, Geneva
J. K. Pratt, Manchester
E. B. Sayre, Allen's Hill
E. W. Simmons, Canandaigua
J. T. Smith, Canandaigua
W. T. Swart, Canandaigua
F. D. Vanderhoof, Phelps
G. H. Van Deusen, Gorham
F. F. Webster, East Bloomfield
L. F. Wilbur, Honeoye
Frank Wilson, Orleans

Number of Members, 38.

MEDICAL SOCIETY OF THE COUNTY OF ORANGE.

(Organized July 1, 1806.)

MEETINGS.—Annual, first Tuesday in May; semi-annual, first Tuesday in October.

Officers. (June, 1892.)

John T. Howell, *President.* Burke Pillsbury, *Vice-President.*
Theo. D. Mills, *Secretary.* H. H. Robinson, *Treasurer.*

Censors: Smith Ely, H. Hardenburgh, John H. Thompson, G. A. Emory.

Committee on Hygiene: Wm. E. Douglas, R. V. K. Montfort, S. Van Etten.

Delegates to State Medical Society: Wm. L. Cuddeback, Wm. E. Douglas.

Members.

A. E. Adams, Newburgh
C. W. Banks, Port Jervis
Wm. Beattie, Cornwall
George S. Bond, Washingtonville
E. H. Borst, Newburgh
J. C. Boyd, Monroe
H. K. Bradner, Warwick
W. B. Bradner, Warwick
A. L. Brown, Cornwall
C. W. Butler, Cornwall
S. G. Carpenter, Chester
D. T. Condiet, Searsville
Clinton G. Cooley, Montgomery
Wm. L. Cuddeback, Port Jervis
F. W. Dennis, Unionville
Wm. E. Douglas, Middletown
S. D. Dubois, Blooming Grove
E. Ross Elliott, Montgomery
E. S. Elmer, Cornwall
Smith Ely, Newburgh
G. A. Emory, Middletown
Harvey Everett, Middletown
A. P. Farries, Warwick
Gaslav Gartzmann, Newburgh
L. L. Gillette, Poughkeepsie
A. M. Goodman, Jr., Salisbury
Lewis Hanmore, Newburgh
H. Hardenburgh, Port Jervis
John T. Howell, Newburgh
Joseph B. Hulett, Middletown
James H. Hunt, Port Jervis
A. J. Jessup, Goshen
A. B. Jova, Newburgh
A. D. Leonard, Central Valley
D. G. Lippincott, Campbell Hall
J. W. McReady, Goshen
T. D. Mills, Middletown
J. Moffat, Washingtonville
R. V. K. Montfort, Newburgh
Mrs. E. R. G. Myer, Poughkeepsie
Wm. J. Nelson, South Centreville
E. A. Nugent, Unionville
Arthur Pell, Goshen
J. B. Peters, Walden
B. Pillsbury, Middletown
H. A. Pooler, Goshen
E. Potts, Port Jervis
Willis I. Purdy, West Town
H. H. Robinson, Goshen
A. C. Santee, Scotchtown
W. T. Seeley, Amity
D. B. Smiley, Middletown
C. P. Smith, Chester
M. C. Stone, Newburgh
Hugh M. Struble, Middletown
Henry B. Swartout, Port Jervis
W. C. Terry, Ridgebury
J. H. Thompson, Goshen
S. Van Etten, Port Jervis
Theodore Writer, Otisville

Number of Members, 60.

MEDICAL SOCIETY OF THE COUNTY OF ORLEANS.

(Organized January 8, 1873.)

MEETINGS. Annual, first Thursday in November; semi-annual, first Thursday in May.

Officers. (November, 1891.)

John H. Taylor, *President.* Charles E. Fairman, *Vice-President.*
D. H. Brennan, *Secretary and Treasurer.*

Censors: J. G. Dolley, Tousley B. Lewis, G. J. Lund,
H. L. James, F. B. Storer.

Delegate to State Medical Society: George J. Lund.

Members.

E. R. Armstrong, Holley
R. W. Bamber, Kendal
D. H. Brennan, Albion
M. L. Caverly, Carlton
James Chapman, Medina
Samuel R. Q. Cochrane, Albion
J. G. Dolley, Albion
W. F. Eaman, Gaines
Charles E. Fairman, Lydonville
Willard Fitch, Knowlesville
Harvey L. James, Shelby
John T. James, Medina
F. L. June, Waterport
Tousley B. Lewis, Albion
George J. Lund, Medina
Edward Munson, Medina
J. J. Simonds, Barre Centre
J. F. Stokes, Eagle Harbor
F. B. Storer, Holley
John E. Sutton, Albion
J. H. Taylor, Holley
E. M. Tompkins, Knowlesville
H. C. Tompkins, Knowlesville
Mrs. Harriet N. Watson, Albion
E. Whittier, East Carlton

Number of Members, 25.

Removed: Wm. C. Bailey to Knoxville, Alabama.

Deceased: T. R. Bamber, of Carlton.

MEDICAL SOCIETY OF THE COUNTY OF OSWEGO.

(Organized in 1821.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in December, at Oswego.

Officers. (June, 1892.)

H. W. Caldwell, *President.* Charles R. Lee, *Vice-President.*
F. L. Cooley, *Secretary.* Charles G. Bacon, *Treasurer.*

Censors: J. K. Stockwell, E. F. Marsh, S. J. Crockett,
J. B. Todd, J. L. Moer.

Delegates to State Medical Society: J. K. Stockwell, E. F. Marsh.

Members.

C. G. Bacon, Fulton
C. J. Bacon, Camden
N. W. Bates, Central Square
D. D. Becker, Mexico
Strong M. Bennett, Mexico
E. H. Boyd, Hannibal
W. J. Bulger, Oswego
H. W. Caldwell, Pulaski
C. C. P. Clark, Oswego
A. S. Coe, Oswego
C. M. Coe, Lycoming
F. R. Coe, Sand Bank
F. L. Cooley, Oswego
R. N. Cooley, Hannibal Center

Wm. B. Coye, Fulton
S. J. Crockett, Sandy Creek
Byron Dewitt, Oswego
E. J. Dimon, Hastings
P. M. Dowd, Oswego
D. D. Drake, Central Square
E. J. Drury, Phœnix
J. W. Eddy, Oswego
Joseph Gardinier, Williamstown
Albert W. Green, Palermo
T. J. Green, Mexico
N. F. Hall, Fulton
John E. Hamill, Phœnix
Vincent G. Hamill, Phœnix
Frank L. Harter, Parish
Cyrus Havens, Hannibal
C. E. Heaton, Mexico
D. C. Highriter, New Haven
J. W. Huntington, Mexico
Mary K. Hutchins, Oswego
George P. Johnson, Mexico
Ira L. Jones, Minetto
J. T. Langan, Oswego
C. M. Lee, Fulton
M. J. Lawler, Oswego
F. S. Low, Pulaski
E. F. Marsh, Fulton
J. H. Mease, Oswego
J. L. Moer, South Richland
G. W. Nelson, Orwell
J. Pero, West Amboy
H. D. C. Phelps, Oswego
F. G. Potter, Cleveland
E. Rainier, Oswego
Alfred Rice, Hannibal
C. A. Sheridan, Oswego
G. W. Snyder, Scriba
J. K. Stockwell, Oswego
A. L. Thompson, Sandy Creek
J. B. Todd, Parish
Wm. C. Todt, Oswego
W. M. Wells, Oswego Falls
G. G. Whittaker, Oswego Falls
Hadwen P. Wilcox, Central Square

Number of Members, 58.

Honorary Members: C. H. Butler, Oswego, J. C. Curtis, D.D.S., Fulton, J. V. Kendall, Baldwinsville.

Deceased: Daniel Pardee, Fulton, August 25, 1891, æt. 57.

MEDICAL SOCIETY OF THE COUNTY OF OTSEGO.

Meetings.—Annual, third Tuesday in July, at Cooperstown; semi-annual, third Tuesday in January; quarterly, as directed at each regular meeting.

Officers. (July, 1891.)

H. D. Blanchard, *President.* Charles H. Chesebro, *Vice-President.*
H. W. Boorn, *Secretary.* E. B. Dye, *Treasurer.*

Committee on Hygiene: H. Lathrop, E. J. Morgan, W. B. Crane.

Delegates to State Medical Society: Nathan Smith, O. W. Peck.

Members.

Geo. A. Armstrong, Burlington Flats
Wilson T. Bassett, Cooperstown
B. E. Bishop, Garrattsville
A. D. Blakely, Milford
H. D. Blanchard, Portlandville
Henry W. Boorn, Schenevus
Meigs Case, Oneonta
Lorenzo B. Chapman, West Laurens
Chas. H. Chesebro, Unadilla Forks
B. A. Church, Oneonta
H. H. Clapsaddle, Toddsville
W. B. Crane, Richfield Springs
E. B. Dye, Fly Creek
J. P. Elliott, Oneonta
M. R. Engael, South Valley
George F. Fuller, Oneonta
T. S. Fitch, East Springfield
M. L. Ford, Oneonta
Charles T. Fox, Garrettsville
John W. Greene, West Laurens
W. H. Hall, Morris
H. T. Harris, Laurens
E. D. Hills, Binghamton
E. E. Houghton, Schenevus
E. L. Johnson, Hartwick
D. R. Kenyon, Sherburne, Chenango Co
Horace Lathrop, Cooperstown
J. K. Leaning, Cooperstown
Wm. H. Leonard, Worcester

W. R. Lough, Edmeston Centre
D. B. Manchester, Oneonta
J. H. Martin, Otego
George Merritt, Cherry Valley
George L. Merritt, Cherry Valley
John H. Moon, East Springfield
E. J. Morgan, Oneonta
G. S. Olin, Oneonta
C. E. Parish, Maryland
Ozias W. Peck, Oneonta
S. G. Pomeroy, West Oneonta
L. H. Quackenbush, Schenevus
A. S. Seeber, Milford
W. R. Seeber, Milford
George A. Sloan, Westford
Nathan Smith, Richmondville
E. W. Spafford, Portlandville
J. W. Sterricker, Roseboom
Addison P. Strong, Laurens
P. Kerney Strong, Laurens
J. W. Swanson, Springfield Center
J. J. Sweet, Unadilla
E. Travis, Masonville, Delaware Co
J. H. Van Rensselaer, Oneonta
Number of Members, 53.

Honorary Member.

W. A. Thayer, Cooperstown.

Deceased: Samuel H. Case, Oneonta, June 18, 1892, æt. 83; F. A. Bell, Oneonta; James Walker, Cherry Valley.

MEDICAL SOCIETY OF THE COUNTY OF PUTNAM.

(Organized July 28, 1871.)

MEETINGS.—Annual, fourth Tuesday in October; semi-annual, fourth Tuesday in April.

Officers. (October, 1891.)

A. Ely, *President.* Austin La Monte, *Vice-President.*
L. H. Miller, *Secretary and Treasurer.*

Censors: J. E. Card, Jr., A. L. Monte, N. W. Wheeler.

Delegate to State Medical Society: Austin La Monte.

Members.

J. Edson Carl, Jr., Mahopac
Addison Ely, Carmel
Austin La Monte, Carmel
Lewis H. Miller, Brewster
George W. Murdock, Cold Spring
J. E. Reed, Carmel
Nathan W. Wheeler, Patterson
Number of Members, 7.

Honorary Member.

H. Pearce, Pawling, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF QUEENS

MEETING.—Annual, last Tuesday in May; semi-annual, last Tuesday in October.

Officers. (May, 1892.)

C. G. J. Finn, *President.* John Mann, *Vice President.*
James S. Cooley, *Secretary and Treasurer.*

Censors: G. K. Menyen, H. P. Heyen, W. H. Zabriskie
P. H. Frye, C. H. Ludlum.

Delegates to State Medical Society: James S. Cooley, L. N. Lanehart.

Members.

Charles H. Barker, Jamaica
J. H. Bogart, Roslyn
W. J. Cocke, Port Washington
James S. Cooley, Glen Cove
G. W. Faller, Oyster Bay
C. G. J. Finn, Hempstead
Peter Y. Frye, Oyster Bay
John P. Heyen, Farmingdale
C. L. Hogeboom, Cedarhurst
L. N. Lanehart, Hempstead.
C. H. Ludlum, Hempstead
John Mann, Jericho
G. K. Meynen, Jamaica
W. P. Overton, Cold Spring
E. D. Skinner, Mineola
B. G. Strong, Long Island City
J. F. Valentine, Brooklyn
Darling B. Whitney, East Norwich
Wm. D. Wood, Jamaica
W. H. Zabriskie, Glen Cove

Number of Members, 20.

Honorary Members.

Walter B. Chase, Brooklyn
Lewis A. Sayre, New York

MEDICAL SOCIETY OF THE COUNTY OF RENSSELAER.

(Organized 1806.)

MEETINGS.—Annual, second Tuesday in January; stated, second Tuesday in each month, except in January, July, and August.

Officers. (January, 1892.)

LeRoy McLean, *President.* Washington Akin, *Vice-President.*
R. Brinsmade Bontecou, *Secretary.* O. F. Kinloch, *Treasurer.*

Censors: H. C. Gordinier, G. A. Bradbury.

Delegates to State Medical Society: C. B. Herrick, W. W. Seymour, J. B. Harvie.

Members.

(Where no town is mentioned Troy is to be understood.)

W. Akin, 12 Fourth st
A. Allen, Grafton Centre
C. S. Allen, Greenbush
W. L. Allen, Greenbush
L. J. Archambault, 121 Third st
N. H. Ballou, Lansingburgh
Joseph E. Baynes, 2149 Fifth av
J. H. Bissell, 2187 Fifth av
R. B. Bontecou, 82 Fourth st
R. Brinsmade Bontecou, 82 Fourth st
B. S. Booth, 21 First st
G. A. Bradbury, Lansingburgh
H. B. Burton, 75 Fourth st
M. H. Burton, 75 Fourth st
E. W. Capron, Lansingburgh
J. H. Cipperly, 131 2d st
M. S. Dickinson, 236 3d st
M. Felter, 1626 5th av
E. D. Ferguson, 5th av and Broadway
Wm. Finder, Jr., 2 Union pl
H. C. Gordinier, 89 4th st
R. G. Goudie, 164 Congress st
J. C. Hannon, Hoosick Falls
J. B. Harvie, 1741 Fifth av
T. B. Heimstreet, 14 Division st
C. B. Herrick, 1824 Fifth av
S. W. Houston, 2d st
J. C. Hutchison, 33 4th st
H. S. Ives, Lansingburg
M. Keenan, 2301 Sixth av
O. F. Kinloch, 16 4th st
J. D. Lomax, Marshall Infirmary
G. E. Lyon, 1915 Fifth av
F. T. McIntosh, 2654 Fifth av
D. Magee, 116 3d st
W. P. Mason, Prof. Chem. R. P. I.
J. McChesney, Pawling av
Leroy McLean, 21 1st st
O. Mallet, 339 2d st
F. E. Mayberry, Hoosick Falls
Geo. L. Meredith, Waverly pl
H. E. Mitchell, 84 4th st
J. W. Morris, 1823 Third av
A. Y. Myers, Buskirk's Bridge
C. E. Nichols, 25 1st st

J. O'Connor, Troy Hospital
J. C. O'Haire, 184 3d st
Z. Rousseau, Ferry and 2d sts
T. B. St. John, Centre Brunswick
W. P. Seymour, 105 2d st
W. W. Seymour, 105 3d st
S. A. Skinner, Hoosick Falls
F. F. Stannard, 2543 Fifth av
R. D. Traver, 14 Fox st
E. J. Ward, 1 Cyprus st
R. H. Ward, 53 4th st
S. H. Webster, 241 River st
M. A. Wheeler, Albia
Isaac N. Wright, Averill Park

Number of Members, 59.

MEDICAL SOCIETY OF THE COUNTY OF RICHMOND.

Organized January 17, 1855.

MEETINGS.—Annual, first Wednesday in January; stated, first Wednesday in April, July, and October, 3.30 P.M., at the S. R. Smith Infirmary, Tompkinsville.

Officers. (April 6, 1892.)

F. E. Martindale, *President.* F. Mechtold, *Vice-President.*
H. C. Johnston, *Secretary and Treasurer.*

Censors: J. W. Wood, T. J. Thompson, R. H. Golden.

Delegate to State Medical Society: E. D. Coonley.

Members.

H. Beyer, Stapleton
W. T. Bourne, Tompkinsville
F. E. Clarke, West New Brighton
J. G. Clarke, West New Brighton
E. D. Coonley, Mariners' Harbor
A. D. Decker, Princess Bay
R. Henry Golder, Rossville
G. C. Hubbard, Tottenville
F. U. Johnston, New Brighton
H. C. Johnson, New Brighton
H. D. Joy, Snug Harbor
F. E. Martindale, Port Richmond
F. Mechtold, Stapleton
Isaac L. Millspaugh, Port Richmond
G. W. Nelson, Port Richmond
Jeff. Scales, New Brighton
T. J. Thompson, Clifton
J. J. Van Rensselaer, New Brighton
J. E. Vidal, Stapleton
Theodore Walser, New Brighton
W. C. Walser, Port Richmond
Walker Washington, Tottenville
J. W. Wood, Port Richmond

Number of Members, 23.

MEDICAL SOCIETY OF THE COUNTY OF ROCKLAND.

Reorganized May 18, 1850.

MEETINGS.—Annual, last Tuesday in May; semi-annual, last Tuesday in October.

Officers. (May 24, 1889.)

E. B. Laird, *President.* E. H. Maynard, *Vice-President.*
William Govan, *Secretary.* I. C. Haring, *Librarian.*

Censors: A. O. Bogert, G. A. Blauvelt, J. O. Polhemus.

Delegate to State Medical Society: —— ——.

Members.

Garrett A. Blauvelt, Nyack
Albert O. Bogert, Pearl River
S. Demerest, Suffern
William Govan, Stony Point
Isaac C. Haring, West Nyack
H. D. House, Rockland Lake

Eugene B. Laird, Haverstraw
Frank L. Laverseur, Haverstraw
C. H. Masten, Sparkill
E. H. Maynard, Nyack
J. O. Polhemus, Nyack
James J. Stephens, Tappantown
Number of Members 12.

Honorary Member: Isaac J. Wells, New York, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF ST. LAWRENCE.

(Reorganized in 1864.)

MEETINGS.—Annual, third Tuesday in May; semi-annual, third Tuesday in October, at the place appointed by the vote of the annual meeting.

Officers. (May, 1892.)

Silas E. Brown, *President.*
S. W. Close, *Secretary.*
John E. Sherman, *Vice-President.*
C. C. Bartholomew, *Treasurer.*

Censors: Jesse Reynolds, B. F. Drury, E. H. Bridges.

Delegates to State Medical Society:

A. H. Allen, W. S. Daly, F. H. Brewer.

Members.

Andrew H. Allen, Gouverneur
F. D. Allen, Richville
F. A. Anderson, Massena
L. B. Baker, Russell
C. W. Bayley, Rensselaer Falls
C. C. Bartholomew, Ogdensburg
John N. Bassett, Jr., Canton
Silas J. Bower, Waddington
F. H. Brewer, Madrid
E. H. Bridges, Ogdensburg
Z. B. Bridges, Ogdensburg
Silas E. Brown, Ogdensburg
H. H. Carpenter, Lawrenceville
S. W. Close, Gouverneur
G. R. Cook, Louisville
M. D. Cook, West Stockholm
W. S. Daly, Ogdensburg
S. W. Dodge, Massena
A. C. Drury, Canton
Benjamin F. Drury, Gouverneur
Fred. H. Drury, Gouverneur
H. E. Dunton, North Lawrence
J. Q. Flood, Hopkinton
David M. Foss, Depeyster
James S. Gale, Canton
James Garvin, Morristown
A. B. Goodenough, Edwards
E. H. Hackett, North Lawrence
H. T. Hammond, Chase's Mills
W. B. Hanbidge, Ogdensburgh
Charles B. Hawley, Gouverneur
T. R. Hossie, Gouverneur
O. J. Hutchins, Ogdensburgh
A. M. Larkin, Norwood
Orrell McFadden, Massena
Grant C. Madill, Ogdensburgh
W. J. S. Miller, Depeyster
Peter Monakey, Gouverneur
Robert Morris, Ogdensburgh
John Morrison, Ogdensburgh
J. M. Mosher, Ogdensburgh
Martin S. Parker, Parishville
T. A. Pease, Norwood
James A. Phillips, Morristown
John C. Preston, Canton
W. N. Rand, Rossie
G. W. Reynolds, Madrid
Jessie Reynolds, Potsdam
W. H. Reynolds, Potsdam
George M. Russell, Crary's Mills
B. F. Sherman, Ogdensburgh
John E. Sherman, Ogdensburgh
Moses E. Smith, Colton
W. C. Smith, Brasher Falls
George B. Smith, Winthrop
H. A. Stearns, Waddington
E. C. Walsh, Madrid
Wm. E. Whitford, Morristown
P. M. Wise, Ogdensburgh
Number of Members, 59.

Deceased: A. R. Gregor, Hammond, June 3, 1891, æt. 75; E. G. Seymour, Hermon, May 4, 1892, æt. 56; A. B. Sherman, Morrisburgh, Ont., March 20, 1890, æt. 76.

MEDICAL SOCIETY OF THE COUNTY OF SARATOGA.

(Organized in July, 1807.)

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in December.

(This County Society has not communicated with the State Society since 1884.)

Members.

J. M. Austin, New York
N. H. Ballou, Lansingburgh
C. Boughton, Waterford
F. M. Boyce, Saratoga Springs
C. D. Bull, Stillwater
A. B. Burger, Mechanicsville
D. B. Burrus, Burnt Hill
Geo. F. Comstock, Saratoga Springs
H. C. Cooper, Clifton Park
C. Ensign, Mechanicsville
Frank Gow, Schuylerville
C. S. Grant, Saratoga Springs
W. H. Holl, Saratoga Springs
W. H. Hodgman, Saratoga Springs
E. G. Inlay, Saratoga
I. G. Johnson, Greenfield Centre
A. C. Kniskern, Crescent
M. Lewis, Ballston Spa
R. C. McEwen, Saratoga Springs
John Moore, Bacon Hill
B. J. Murray, Saratoga Springs
T. E. Parkman, Rock City Falls
J. R. Preston, Schuylerville
L. B. Putnam, Saratoga Springs
T. B. Reynolds, Saratoga Springs
S. N. Rowell, Dunning st
F. A. Sherman, Ballston Spa
H. Vandenburgh, Ballston Spa
F. A. Young, West Charlton

Number of Members, 29.

Deceased: M. N. Babcock, Saratoga Springs, May 21, 1892, æt. 72; L. Moore, Ballston Spa, July 13, 1882, æt. 84.

MEDICAL SOCIETY OF THE COUNTY OF SCHENECTADY.

(Organized January 19, 1869.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January, 1892.)

Charles C. Duryee, *President.* E. P. Van Epps, *Vice-President.*
John A. Heatley, *Secretary.* H. C. Van Zandt, *Treasurer.*

Censors: F. V. Brownell, H. V. Mynderse, D. G. Barry.

Committee on Vital Statistics: M. G. Planck, H. V. Mynderse.

Delegate to State Medical Society: M. G. Planck.

Members.

D. G. Barry, Schenectady
F. V. Brownell, Schenectady
Peter Brumagham, Mariaville
N. G. Cheesman, Scotia
W. T. Clute, Schenectady
N. G. Daggett, Schenectady
C. C. Duryee, Schenectady
A. Ennis, Pattersonville
Robert Fuller, Schenectady
P. R. Furbeck, Gloversville
Charles Hammer, Schenectady
J. A. Heatley, Schenectady
D. L. Kathan, Schenectady
George E. McDonald, Schenectady
J. F. McEncroe, Schenectady
John Mackay, Schenectady
H. V. Mynderse, Schenectady
Wm. Parsons, Fultonville
Wm. L. Pearson, Schenectady
Maurice Perkins, Schenectady
M. G. Planck, Schenectady
James Reagles, Schenectady
J. L. Schoolcraft, Schenectady
G. S. Van Allen, Schenectady
E. P. Van Epps, Schenectady
H. C. Van Zandt, Schenectady
A. T. Vedder, Schenectady
L. T. Vedder, Schenectady
Edwin Young, West Glenville

Number of Members, 29.

Deceased: G. W. Van Voast, Schenectady, July 14, 1892.

MEDICAL SOCIETY OF THE COUNTY OF SCHOHARIE.

(Organized in 1806; reorganized in 1857.)

MEETINGS.—Annual, first Tuesday in June; semi-annual, second Tuesday in October.

Officers. (June, 1892.)

Seth A. Mereness, *President.* Edgar S. Simpkins, *Vice-President.*
H. F. Kingsley, *Secretary.* David Frazier, *Treasurer.*

Censors: Lemuel Cross, C. K. Frazier, H. Sperbeck, W. S. Layman, J. R. Brown.

Committee on Hygiene: Charles McCulloch, W. S. Layman, T. B. Van Alstyne.

Delegate to State Medical Society: Charles McCulloch.

Members.

George S. Baldwin, Gilboa
F. P. Beard, Cobleskill
E. E. Billings, Gilboa
J. R. Brown, Seward
E. E. Brayman, Livingstonville
E. O. Bruce, Hyndsville
W. W. Burgett, Fultonham
C. S. Burnett, Summit
L. Cross, Cobleskill
C. Dickinson, Seward
J. A. Dockstader, Sharon Springs
C. K. Frazier, Cobleskill
D. Frazier, Cobleskill
J. Green, Sharon Springs
Wm. Hagadorn, Gilboa
Abraham L. Haines, Schoharie
R. Grant Havens, Jefferson
John Hotaling, Gallupville
George Jackson, Hunter's Land
H. F. Kingsley, Schoharie
Ezra Lawyer, Cobleskill
W. S. Layman, Schoharie
D. M. Leonard, Broome Centre
R. R. Leonard, Broome Centre
Edward Marsh, Sloansville
Charles McCulloch, Central Bridge
Seth A. Mereness, Carlisle
W. T. Miller, Cobleskill
D. Norwood, Esperance
Joseph Raymond, Schenectady
W. S. Rivenburgh, Middleburgh
R. J. Roscoe, Carlisle
Edgar S. Simpkins, Middleburgh
G. K. Smith, Richmondville
H. Sperbeck, Charlotteville
Charles A. Sternburgh, Howe's Cave
B. W. Terwilliger, Sloansville
James W. Tibbitts, Eminence
Thos. B. Van Alstyne, Richmondville
J. H. Vroonan, W. Blenheim
John H. Weckel, Breakabeen
Henry D. Wells, Middleburgh

Number of Members, 42.

Deceased: I. S. Scott, Grosvenor's Corners.

MEDICAL SOCIETY OF THE COUNTY OF SCHUYLER.

(Organized December 29, 1857.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in July.

Officers.

W. H. Heist, *President.* J. Franklin Barnes, *Vice-President.*
George M. Post, *Secretary and Treasurer.*

Censors: S. B. Allen, E. H. Davis, W. H. Heist, G. M. Post, Geo. P. Laylor.

Delegate to State Medical Society: S. B. Allen.

Members.

S. B. Allen, Burdette
J. F. Barnes, Watkins
Wm. H. Beach, Catharine
A. L. Beahan, Canandaigua, N. Y.
R. Bell, Monterey
M. L. Bennett, Watkins
D. W. Birge, Hector
John Boyce, Weston
E. H. Davis, Elmira
H. H. Fish, Mecklenberg
M. D. Hawes, North Hector
J. H. Hedden, Corning, Steuben Co
W. H. Heist, Townsend
George P. Laylor, Townsend
N. Nivison, Burdette
George M. Post, Havana
D. W. Scutt, Havana
O. B. Sherwood, Cayutaville
B. T. Smelzer, Havana
G. O. Smith, Odessa
H. P. Stillwell, Burdette
J. A. Westlake, Elmira, Chemung Co
L. T. White, Enfield, Tompkins Co
Number of Members, 23.

MEDICAL SOCIETY OF THE COUNTY OF SENECA.

Meetings.—Annual, second Tuesday in May.

Officers.

W. S. Nelson, *President.*
D. F. Evarts, *Secretary.*
J. F. Carman, *Vice-President.*
Frank Seaman, *Treasurer.*

Delegates to Societies: A. Nellis, Jr., New York State Medical Society; E. Lester, American Medical Association; E. W. Bogardus, New York State Medical Association.

Members.

A. J. Alleman, McDougall's
T. E. Bamford, Willard
Geo. A. Bellows, Waterloo
E. R. Bishop, Willard
M. D. Blaine, Geneva
E. W. Bogardus, Seneca Falls
G. B. Bristol, Ovid
J. F. Carlton, Fayette
J. F. Carman, Lodi
J. F. Crosby, Seneca Falls
John Denniston, Ovid
Richard Dey, Romulus
D. F. Evarts, Romulus
John Flickenger, Trumansburg
Louis A. Gold, Farmer
James Haslett, Waterloo
H. G. Hopkins, Willard
Elias Lester, Seneca Falls
P. J. McNamara, Seneca Falls
S. F. Mellen, Willard
Alex. Nellis, Jr., Willard
W. S. Nelson, Seneca Falls
Charles W. Pilgrim, Willard
George Post, Ovid
Herbert E. Schoonmaker, Rochester
Frank Seaman, Seneca Falls
J. H. Sternberg, Waterloo
J. M. Townsend, Townsendville
S. R. Welles, Waterloo
Number of Members, 29.

MEDICAL SOCIETY OF THE COUNTY OF STEUBEN.

Meetings.—Annual, second Tuesday in June; semi-annual, second Tuesday in January.

Officers. (June, 1892.)

M. B. Hubbs, *President.*
C. J. Tomer, *Vice-President.*
Chester T. Stewart, *Secretary and Treasurer.*

Censors: M. T. Babcock, P. K. Stoddard, C. R. Phillips, T. O. Burlison.

Delegates to State Medical Society: R. F. Parkhill, T. O. Burlison.

Members.

H. R. Ainsworth, Addison
M. L. Alden, Hammondspost
A. A. Aldrich, Addison
Eli Allison, Wayne
Henry A. Argue, Corning
M. T. Babcock, Hammondsport
Milton J. Baker, Hornellsville
J. A. Bennett, Prattsburgh
H. M. Bourne, Corning
C. M. Brasted, Hornellsville
T. O. Burlison, Bath
Franklin Burr, Corning
D. L. Case, Howard
George Cauderman, Hornellsville
Amelia A. Christie, Hornellsville
Willis S. Cobb, Corning
D. F. Cridler, Hornellsville
A. H. Cruttenden, Bath
Mrs. A. A. Dolson, Hornellsville
J. S. Dolson, Hornellsville
M. D. Ellison, Canisteo
Lewis Fitzsimmons, South Pultney
T. B. Fowler, Cohocton
F. S. Gallagher, Naples, Ontario Co
A. L. Gilbert, North Cohocton
H. Gilbert, Hornellsville
H. A. Gillett, Savona
I. L. Goff, Cohocton
W. T. Green, Hornellsville
W. W. Green, Prattsburgh
N. M. Herrington, Corning
Joseph Hoare, Corning
G. C. Hubbard, Hornellsville
John S. Hubbs, Hammondsport
M. B. Hubbs, Addison
C. O. Jackson, Cameron
Ambrose Kasson, Bath
J. R. Kelly, Hornellsville
Arthur Kendall, Corning
George W. Lane, Corning
F. M. Lockwood, Bradford
H. G. Mace, Wallace
Thomas F. McNamara, Corning
J. H. McNett, Hornellsville
J. D. Mitchell, Hornellsville
H. B. Nichols, Pultney
S. B. H. Nichols, Corning
W. E. Palmer, Hornellsville
C. S. Parkhill, Hornellsville
Myron H. Parkhill, Howard
R. F. Parkhill, Howard
C. Patterson, Avoca
Thomas H. Pawling, Bath
M. M. Perry, Troupsburgh
Charles R. Phillips, Corning
Benjamin Picket, Canisteo
A. D. Robbins, Corning
C. B. Robertson, Towlesville
Robert J. Scott, Prattsburgh
W. Sheffield, Jasper
I. P. Smith, Bath
W. W. Smith, Avoca
B. M. Spencer, Hornellsville
C. P. Stephens, Wallace
Chester T. Steward, Bath
P. K. Stoddard, Prattsburgh
Stephen M. Switzer, Bradford
C. J. Tomer, Savona
J. H. Tumbull, Hornellsville
Seymour C. Williamson, Canisteo
E. Winnie, Haskinville
F. A. Wygant, Cohocton
Ferand Wylie, Bath

Number of Members, 73.

Deceased: A. F. Mills, Corning, October 14, 1891.

MEDICAL SOCIETY OF THE COUNTY OF SUFFOLK.

(Organized July 22, 1806.)

MEETINGS.—Annual, in April, at Riverhead, during court week; semi-annual, in October, on the day and at the place directed at the April meeting.

Officers. (April, 1892.)

W. W. Hewlett, *President.* —— ——, *Vice-President.*
H. H. Young, *Secretary.* B. D. Skinner, *Treasurer.*
J. H. Benjamin, *Librarian.*

Censors: W. S. Preston, James L. Halsey, L. W. Halsey.

Delegate to State Medical Society: B. D. Skinner.

Members.

Clarence A. Baker, Yaphank
John H. Benjamin, Riverhead
W. S. Bennett, Patchogue
M. L. Chalmers, Port Jefferson

Silas R. Conwith, Bridgehampton
Robert G. Cornwall, Jamesport
Wm. H. Douglass, Babylon
George T. Fanning, Stony Brook
Hugh Halsey, Southampton
James L. Halsey, Islip
L. D. W. Halsey, Bridgehampton
Ed. H. Hamill, Newark
W. W. Hewlett, Babylon
Charles E. Hildreth, Southampton
Wm. A. Hulse, Bay Shore
A. B. Leggett, Babylon
Charles A. Luce, Amityville
James H. Maguire, Salem, Wash Co
Clarence C. Miles, Greenport
John Nugent, Southampton
Edward F. Preston, Amityville
Wm. S. Preston, Patchogue
Barton D. Skinner, Greenport
Arthur H. Terry, Patchogue
H. P. Terry, Riverhead
A. L. Vandewater, Bay Shore
Chas. E. Wells, Sag Harbor
H. H. Young, Riverhead

Number of Members, 28.

Deceased: E. P. Jarvis, Centre Moriches, March, 1892.

MEDICAL SOCIETY OF THE COUNTY OF SULLIVAN.

(Organized October 3, 1809.)

MEETINGS.—Annual, first Wednesday after the second Tuesday in June; semi-annual, whenever the Society directs at the annual meeting.

Officers. (June, 1892.)

Charles E. Piper, *President.* W. W. Murphy, *Vice-President.*
Charles S. Payne, *Secretary.* W. G. Steele, *Treasurer.*

Censors: S. A. Kemp, W. S. Webster, F. T. Wheeler.

Delegate to State Medical Society: W. W. Appley.

Members.

W. W. Appley, Cochecton
George M. Beakes, Bloomingburgh
T. W. Bennett, Jeffersonville
Wm. Brand, Jeffersonville
W. H. DeKay, Hurleyville
A. A. Gillespie, Bethel
N. B. Johnson, Barryville
S. A. Kemp, Callicoon
G. H. Lathrop, Livingston Manor
F. A. McWilliams, Monticello
W. W. Murphy, Liberty
Ridley C. Paine, Bethel
Chas. S. Payne, Liberty
Chas. E. Piper, Wurtsboro
W. H. Steele, Mongaup Valley
R. C. Tuttle, Rockland
W. S. Webster, Liberty
F. T. Wheeler, Rockland

Number of Members, 18.

MEDICAL SOCIETY OF THE COUNTY OF TIOGA.

MEETINGS.—Annual, second Tuesday in January; first quarterly, second Tuesday in April; semi-annual, second Tuesday in July; second quarterly, second Tuesday in October.

Officers. (January, 1892.)

J. M. Barrett, *President.* James Allen, *Vice-President.*
D. S. Anderson, *Secretary.* G. M. Cady, *Treasurer.*

Censors: A. J. Harris, G. M. Cady, R. L. Lounsbury.

Delegate to State Medical Society: J. M. Barrett.

Members.

James Allen, Richford
D. S. Anderson, Owego
W. L. Ayer, Owego
James M. Barrett, Owego
G. W. Beach, Apalachin
Edward Beck, Owego
W. J. Burr, Newark Valley
George M. Cady, Nicholas
C. W. Chidester, Welterville
Abram F. Crans, Owego
J. E. Dixon, Candor
R. D. Eastman, Berkshire
Wm. H. Fisher, Spencer
Henry A. Glover, Windham, Pa.
Chas. F. Griswold, Barton, W. T.
D. D. Harnden, Waverly
R. S. Harnden, Waverly
A. J. Harris, Candor
C. R. Heaton, Owego
C. E. Hollenbeck, Halsey Valley
W. E. Johnson, Waverly
Hiram L. Knapp, Newark Valley
Edward Leonard, Harford Mills
G. B. Lewis, Owego
I. W. Lewis, Apalachin
R. L. Lounsbury, Owego
Alonzo Norris, Spencer
A. T. Pearsall, Owego
E. E. Pease, Nichols
A. W. Post, Tioga Centre
C. R. Rodgers, Newark Valley
C. L. Stiles, Owego
J. H. Tanner, Spencer
J. T. Tucker, Waverly
C. P. Vosburg, Halsey Valley
I. W. Vreeland, Waverly
Thomas Washburn, Spencer

Number of Members, 37.

Deceased: E. B. Phelps, Owego, died June 1, 1892, æt. 92.

MEDICAL SOCIETY OF THE COUNTY OF TOMPKINS.

(Organized about 1815; reorganized October, 1862.)

MEETINGS.—Annual, third Wednesday in May; semi-annual, third Wednesday in November.

Officers. (May, 1892.)

John Winslow, *President.* Platt C. Biggs, *Vice-President.*
Jeannette M. Potter, *Secretary.* Edward Meany, *Treasurer and Librarian.*

Censors: J. A. Lewis, J. Winslow, S. H. Peck.

Committee on Hygiene: B. G. Wilder, James Law.

Delegate to State Medical Society: John Winslow; alternate, W. C. Gallagher.

Members.

Eugene Baker, Ithaca
Judson Beach, Etna
G. M. Beckwith, Groton
J. E. Beers, Danby
Platt C. Biggs, Ithaca
C. C. Cook, Newfield
Benjamin Dunning, Trumansburg
W. C. Gallagher, Slaterville
F. A. Kerst, Jacksonville
E. O. Kyle, Ithaca
J. A. Lewis, Ithaca
Edward Meany, Ithaca
S. H. Peck, Ithaca
Jeannette M. Potter, Ithaca
S. P. Sackett, Ithaca
R. L. Smith, Ithaca
L. T. White, Enfield
Burt G. Wilder, Ithaca
John Winslow, Ithaca

Number of Members, 19.

Honorary Members.

Prof. S. H. Gage, Ithaca. Prof. James Law, Ithaca.
Mrs. Gage.

Deceased: Wesley Newcomb, Ithaca, January 26, 1892, æt. 84.

MEDICAL SOCIETY OF THE COUNTY OF ULSTER.

MEETINGS.—Annual, last Tuesday in May, at Kingston; quarterly, second Tuesday in September, December, and March.

Officers. (June, 1892.)

A. H. Palmer, *President.* C. V. Hasbrouck, *Vice-President.*
Charles A. Munn, *Secretary.* Jacob Chambers, *Treasurer.*

Censors: S. L. Dawes, P. Hayden, G. S. LaMoree.

Delegates to State Medical Society: Jacob Chambers, J. Hasbrouck, S. L. Dawes.

Members.

Benjamin R. Bevier, Napanock
B. B. Bloom, Olive
Chas. S. Brower, Shandaken
B. A. O'Bryan, Woodstock
E. W. Carhart, Milton
Jacob Chambers, Kingston
E. D. Chipman, Saugerties
H. Craft, Stone Ridge
Rufus Crawford, West Camp
C. W. Brispell, Rondout
Isaac C. Dart, Highland
S. L. Dawes, Saugerties
Thomas S. Dawes, Saugerties
John A. Decker, Ulster Park
C. De La Montagne, Port Ewen
C. L. Dodge, Kingston
W. F. Drake, West Hurley
J. F. S. Eastgate, Ellenville
P. Finch, Ellenville
J. Freston, Creek Locks
W. H. Gedney, Milton
C. V. Hasbrouck, Rosendale
J. Hasbrouck, Port Ewen
W. D. Hasbrouck, Rondout
Patrick Hayden, Rosendale
P. D. B. Hoornbeck, Wawarsing
J. E. D. Hoornbeck, Kerhonkson
Augustus Hühne, Rondout
T. O. Keator, Accord
George S. LaMoree, Highland
E. H. Loughran, Kingston
R. Loughran, Kingston
A. H. Mambert, Rondout
Chas. A. Munn, Kingston
R. M. Murphy, Rondout
J. E. Norwood, Kingston
A. H. Palmer, Marlborough
Wm. C. J. Schmidt, Rondout
S. Schoonmaker, Rosendale
G. C. Smith, Rondout
A. A. Stern, Rondout
H. Van Hoevenburg, Kingston
Alfred S. Vrooman, High Falls
Alfred Wolven, Phœnicia
J. D. Wurtz, Kingston

Number of Members, 45.

Honorary Members.

A. T. Douglas, New London, Conn.; Robert Newman, New York, N. Y.; George F. Shrady, New York, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF WARREN.

MEETINGS.—Annual, second Tuesday in June, at Lake George; semi-annual, when and where the Society determine.

Officers. (June, 1892.)

G. R. Martine, *President.* G. H. Aldrich, *Vice-President.*
G. H. McMurray, *Secretary.* Elias Bibby, *Treasurer.*

Censors: A. O. Amedon, L. Charette, D. B. Howard.

Delegate to State Medical Society: W. R. Adamson.

Members.

W. R. Adamson, Lake George
F. F. Aldrich, Chestertown
G. H. Aldrich, Stony Creek
Wm. D. Aldrich, Warrensburgh
W. W. Aldrich, Weaverton
Elias Bibby, Glens Falls
L. Charette, Warrensburgh
R. J. Eddy, Glens Falls
James Ferguson, Glens Falls
C. A. Foster, Glens Falls
D. M. Hall, Lake George
D. B. Howard, Warrensburgh
E. W. Howard, Warrensburgh
W. J. Hunt, Lake George
C. J. Loggins, Weaverton
A. Mallory, Chestertown
G. H. McMurray, Glens Falls
G. R. Martine, Glens Falls
F. H. Stevens, Lake George
Fuel G. Streeter, Glens Falls
Fred. B. Streeter, Glens Falls
Number of Members, 21.

MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON.

(Organized July 1, 1806.)

MEETINGS.—Annual, third Tuesday in May, at such place within the county as the Society shall designate.

Officers. (June, 1892.)

F. G. Fielding, *President.* Wm. B. Mellick, *Vice-President.*
Henry Root, *Secretary and Treasurer.*

Censors: G. H. Whitcomb, S. J. Banker, F. T. Beattie.

Committee on Hygiene: F. H. Bramer, Ross Wilson, Wm. B. Mellick.

Delegates to State Medical Society: G. H. Whitcomb, F. G. Fielding.

Members.

O. C. Baker, Brandon, Vt.
S. J. Banker, Fort Edward
Franklin T. Beatty, Shushan
F. H. Braymer, North Granville
Frank H. Carpenter, West Rupert
J. Cipperly, Middle Falls
E. G. Clark, Sandy Hill
James S. Cooley, Glen Cove
C. J. Farley, Saranac Lake
Fred. G. Fielding, Hartford
S. J. Finch, Fort Ann
J. J. Flint, Albany
T. Z. Gibbs, Fort Ann
H. Gray, Greenwich
P. Z. Hebert, London
A. Hewitt, Saratoga Springs
B. R. Holcomb, Whitehall
S. B. Irwin, West Hebron
Montgomery Jones, Fort Edward
Charles W. Keefer, Mechanicville
B. F. Ketchum, Brattleboro, Vt.
J. Knowlson, Poultney, Vt.
J. Lambert, Salem
A. J. Long, Whitehall
J. A. Madison, West Hebron
W. B. Madison, West Hebron
W. B. Maynard, Salem
Wm. B. Mellick, Fort Edward
J. Millington, East Greenwich
I. T. Munroe, Granville
G. B. Murray, Greenwich
D. T. Pierce, Argyle
Wm. H. Renois, East St. Louis, Mo.
Henry Root, Whitehall
B. C. Senton, Rutland, Vt.
J. C. Sill, Argyle
George M. Stillman, ——
W. A. Tenney, Granville
A. W. Tupper, North Granville
T. C. Wallace, Cambridge
G. H. Whitcomb, Greenwich
Ross Wilson, Sandy Hill
A. M. Young, Salem
Number of Members, 43.

MEDICAL SOCIETY OF THE COUNTY OF WAYNE.

(Organized July 2, 1823.)

MEETINGS.—Annual, second Tuesday in July; semi-annual, second Tuesday in January.

Officers. (January, 1892.)

George D. York, *President.* L. H. Smith, *Vice President.*
Miss J. M. Turner, *Secretary.* Darwin Colvin, *Treasurer.*

Censors: J. N. Arnold, M. A. Veeder, W. J. Hennessy, N. E. Landon, F. Finley.

Delegate to State Medical Society: J. N. Arnold.

Members.

J. N. Arnold, Clyde
J. W. Atwood, Marion
G. D. Barrett, Marengo
Frank Barton Clyde
H. N. Burr, Walworth
M. E. Carmer, Lyons
H. L. Chase, Palmyra
Darwin Colvin, Clyde
L. A. Crandall, Palmyra
E. H. Draper, Wolcott
Frank Finley, Macedon
W. J. Hennessy, Palmyra
D. B. Horton, Red Creek
Samuel Ingraham, Palmyra
N. E. Landon, Newark
M. W. T. Negus, South Sodus
W. F. Nutten, Newark
F. M. Pasco, Red Creek
James W. Putnam, Lyons
H. F. Seaman, Alton
A. F. Sheldon, Lyons
J. E. Smith, Clyde
L. H. Smith, Palmyra
J. L. Sprague, Williamson
L. S. Sprague, Williamson
Miss J. M. Turner, Lyons
M. A. Veeder, Lyons
George D. York, Huron
A. A. Young, Newark

Number of Members, 29.

MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER.

(Organized May 8, 1797.)

MEETINGS.—Annual, third Tuesday in June; intermediate, third Tuesday in September, November, January, and April.

Officers. (June, 1892.)

W. F. Greene, *President.* Philander Collard, *Vice-President.*
R. C. Eddy, *Secretary.* Robert T. Howe, *Treasurer.*
Newton F. Curtis, *Curator.*

Censors: A. M. Campbell, W. H. Helm, H. E. Schmid.

Delegates to State Medical Society: Stuart B. Carlisle, Charles Mason, Henry Moffatt.

Committee on Hygiene: H. E. Schmid, A. O. Snowden.

Members.

Frank A. Augur, Armonk
G. B. Balch, Yonkers
Garret N. Banker, Yonkers
A. T. Banning, Mt. Vernon
Elizabeth H. Bates, Port Chester
Florence A. Belknap, Mt. Vernon
W. A. Bell, Yonkers
A. C. Benedict, Yonkers
Charles S. Benedict, 315 W. 19th st New York
H. Beatie Brown, ——
Valentine Brown, Yonkers
E. F. Brush, Mt. Vernon
C. P. Byington, Croton Landing
P. S. Byrne, Yonkers
P. A. Callan, Yonkers
A. M. Campbell, Mt. Vernon
Stuart B. Carlisle, Mt. Vernon
W. J. Carpenter, Katonah
H. Carruthers, Tarrytown
D. L. Casselman, Purdy's Station
Chas. Frs. Chapman, Katonah
J. Frs. Chapman, Katonah
G. C. S. Choate, Pleasantville
J. H. Churchill, Pawling
E. M. Clarke, Mamaroneck

Philander Collard, Sing Sing
E. E. Colton, Yonkers
J. E. Comfort, Morrisania
David T. Corde, Mt. Vernon
R. B. Coutant, Tarrytown
A. H. Crump, Jerome
James H. Curry, Shrub Oak
Newton F. Curtis, White Plains
H. G. V. DeHart, Pleasantville
Wm. E. Diller, New York
Charles E. Drummond, Bedford
Carrol Dunham, Irvington
Robert Condit Eddy, New Rochelle
George J. Fisher, Sing Sing
N. H. Freeland, Tarrytown
J. B. Fulton, Irvington
John H. Furman, Tarrytown
J. F. Gibson, Yonkers
Fred. R. Glover, ———
Thomas F. Goodwin, Mt. Vernon
Wm. D. Granger, Mt. Vernon
Wm. F. Greene, Mt. Vernon
Daniel M. Griffin, ———
J. Albert Hagy, Dobbs Ferry
E. I. Harrington, Yonkers
H. F. Hart, Shrub Oak
Wm. H. Helm, Sing Sing
E. M. Hermance, Yonkers
P. L. Hitchcock, Croton Falls
Stephen F. Horton, Peekskill
Robert T. Howe, Mt. Vernon
H. K. Huntington, New Rochelle
Louis Jeschinsky, Mt. Vernon
David John, Yonkers
C. H. Judson, Dobbs Ferry
C. E. Kimball, Mt. Vernon
John A. Knapp, Mt. Vernon
C. C. Knight, Peekskill
Jacob J. Lewin, Port Chester
Z. E. Lewis, New Rochelle
John J. Linson, Tarrytown
George H. Magness, White Plains
Charles Mason, Peekskill
E. F. Matthews, Port Chester
Thomas McCrossen, City Island
W. J. McDermott, Westchester
S. H. McIlroy, Morrisania
B. W. McNichol, Westchester
C. S. Mead, Port Chester
Samuel F. Mellen, Sing Sing
Charles A. Miles, Yonkers
W. A. Miner, Mt. Kisco
A. J. Mixsell, Rye Neck
Henry Moffatt, Yonkers
E. M. Morrell, Yonkers
S. O. Myers, Mt. Vernon
W. H. Neilson, New Rochelle
Edward S. Newell, ———
Patrick W. O'Brien, Peekskill
C. O. Olmstead, Cross River
John Parsons, King's Bridge
H. E. Patch, Chappaqua
J. L. Porteus, Yonkers
P. H. Pyne, Yonkers
C. M. Raymond, New Rochelle
Charles Rich, Cornell
Louis Root, Tarrytown
H. E. Schmid, White Plains
T. F. Sharkey, Mt. Vernon
Emil Schopern, Yonkers
E. Shoelderfer, Yorktown
Fred. H. Strong, Yonkers
W. H. Sherman, Yonkers
H. Eugene Smith, Mt. Vernon
J. W. Smith, Tuckahoe
Alex. G. Snowden, Peekskill
James A. Stewart, Tuckahoe
Samuel Swift, Yonkers
E. B. Tefft, New Rochelle
John C. Todd, Tarrytown
B. R. Tupper, Mt. Vernon
Nathan P. Tyler, New Rochelle
Nathan A. Warren, Yonkers
G. C. Weiss, Mt. Vernon
W. L. Wells, New Rochelle
Julia St. John Wygant, Peekskill

Number of Members, 111.

Deceased: Nathaniel C. Husted, Tarrytown, November 19, 1891, æt. 66.

MEDICAL SOCIETY OF THE COUNTY OF WYOMING.

MEETINGS.—Annual, second Tuesday in June.

(This County Society has not communicated with the State Society since 1884.)

Members.

George M. Blackmore, Pike
F. E. Bliss, Weathersfield Springs
Wm. M. Body, North Java
Carlos E. Bowman, Bennington Centre
E. G. Harding, Wyoming
S. S. Kennedy, Varysburg
Zera J. Lusk, Warsaw
W. N. Martin, Cowlesville
R. W. Miller, Castile
Samuel S. Miller, Java
John C. Nichols, North Java

George M. Palmer, Pike
George Palmer, Jr.
Lucius Peck, Arcade
Robert Rae, Portageville
James P. Rathbun, Java
D. W. Rudgers, Perry
S. Chester Smith, Castile
Horatio Spencer, Pike

Number of Members, 19.

MEDICAL SOCIETY OF THE COUNTY OF YATES.

MEETINGS.—Annual, first Tuesday in June; semi-annual, second Tuesday in January. Other meetings as directed by the Society.

Officers. (June, 1892.)

Benjamin L. Holt, *President.*
N. L. Lusk, *Secretary.*
C. M. Van Dyke, *Vice-President.*
J. M. Maloney, *Treasurer.*

Censors: N. L. Lusk, J. M. Maloney, Wm. Oliver.

Delegate to State Medical Society: J. M. Maloney.

Members.

Marquis C. Babcock, Branchport
G. W. Brundage, West Dresden
Wm. A. Carson, Rushville
Cyrus C. Harvey, Dundee
Byron B. Havens, Penn Yan
Benjamin L. Holt, Penn Yan
Schuyler Lott, Bellona
N. L. Lusk, Penn Yan
John M. Maloney, Eddytown
O. E. Newman, Potter Centre
Wm. Oliver, Penn Yan
Wm. A. Oliver, Penn Yan
A. R. Otis, Dundee
C. B. Stone, Himrods
C. M. Van Dyke, Himrods
James M. Waddell, Penn Yan

Number of Members, 16.

INCORPORATED VOLUNTARY MEDICAL SOCIETIES.

(By-laws, Chapter I., Section 2.)

MEDICAL ASSOCIATION OF NORTHERN NEW YORK.

(Organized 1872; Incorporated 1889; Delegate admitted 1889.)

Annual meeting, second Tuesday in October, at Malone.

Officers.

D. S. Kellogg, *President.*
R. J. Wilding, *Secretary.*
G. C. Madill, *Vice-President.*
T. Gay, *Treasurer.*

Trustees: B. F. Sherman, S. P. Bates, T. Gay, C. Skinner, J. H. Smith, D. S. Kellogg.

Delegate to State Medical Society: J. A. Grant.

Members.

Fred. A. Anderson, Massena
A. W. Attwater, St. Regis Falls
C. B. Barber, Keesville
C. C. Bartholomew, Ogdensburgh
S. P. Bates, Malone
Blake Bigelow, Malone
F. H. Brewer, Madrid
E. Bridges, Ogdensburgh
L. B. Bridges, Ogdensburgh
M. D. Briggs, Champlain
J. H. Cameron, Malone
H. H. Carpenter, Lawrenceville

M. S. Carpenter, Chateaugay
W. E. Clough, West Chazy
G. C. Cole, Potsdam
C. J. Crippen, Trout River
C. Dodge, Rouse's Point
H. E. Dunton, Swanton
A. W. Fairbanks, Chazy
H. S. Farnsworth, Chateaugay
D. R. Freeman, Chazy
H. Furness, Malone
T. Gay, Malone
W. Gillis, Fort Covington
J. A. Grant, Malone
F. F. Grey, Malone
W. R. Hanbridge, Ogdensburgh
W. H. Harwood, Chasm Falls
L. E. Hawkins, Brushton
T. S. Haynes, La Cole, P. Q.
W. H. Hingston, Montreal, P. Q.
O. A. Holcomb, Plattsburgh
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APPENDIX.

LAWS OF NEW YORK OF INTEREST TO THE MEDICAL PROFESSION ENACTED BY THE LEGISLATURE OF 1892.

RELATING TO TUBERCULOSIS AND OTHER INFECTIOUS DISEASES OF CATTLE.

Chapter 487.

AN ACT

In relation to tuberculosis in milch cows and other cattle and infectious and contagious diseases of cattle. Approved by the Governor, May 5, 1892.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. That the State Board of Health shall use all reasonable means for ascertaining the existence and cause of disease in, or danger to health from, milch cows and other cattle in the State of New York, and for averting the same, and preventing all injury from tuberculosis in milch cows, or other cattle, in any part of the State; and shall promptly cause all proper information in possession of said Board of Health respecting any such disease among cattle in any part of the State to be sent to the local Board of Health of the city, village, or town nearest to the herd, cows, or other cattle affected by any such disease, and shall add thereto such useful suggestions as to the removal of all sources of danger therefrom or the destruction of said cattle as the experience of the said Board may at any time supply. And it is made the duty of the health authorities throughout the State to supply the like information and suggestions to the State Board of Health respecting the existence of any infectious or contagious disease in milch cows or other cattle in any part of the State.

SEC. 2. The State Board or Health shall have power to employ such and so many medical and veterinary practitioners and other persons, as it may from time to time deem necessary, to assist in the inspection, in the isolation, destruction, or disposition of milch cows or other cattle affected with tuberculosis or any infectious or contagious disease in any portion of the State, to prescribe rules and regulations for such inspectors and employés, and to fix their compensation.

SEC. 3. Whenever tuberculosis shall be found among milch cows or other cattle, in any part of the State, it shall be the duty of the State Board of

Health to take measures to suppress said disease promptly, to prevent the same from spreading, and the said State Board of Health shall have authority to order all persons to take such precautions against the spread of such disease as in the judgment of the said State Board of Health may be necessary or expedient; and, further, to call upon all sheriffs, deputy sheriffs, and officers of the peace in the neighborhood where such disease extends among milch cows or other cattle, to carry out and enforce the orders of said Board of Health respecting the same, and to observe and carry out the rules and orders and instructions which they may receive from the said Board of Health in the premises; and, further, to prescribe regulations for the destruction of animals affected with tuberculosis, or any contagious or infectious disease, and for the proper disposition of their hides and carcasses, and of all objects which might convey infection or contagion; provided, that no animal shall be destroyed unless first examined by a medical or veterinary practitioner in the employ of the State Board of Health aforesaid; and further, to prescribe rules and regulations for the disinfection of premises, buildings, boats, railroad cars, stables, and all objects from or by which infection or contagion may take place or be conveyed, and to alter and modify from time to time all such rules, regulations, orders, and instructions as the said State Board of Health may deem expedient.

SEC. 4. Whenever in the judgment of the said State Board of Health it may become necessary to prevent the spread of tuberculosis or any infectious or contagious disease of domestic animals, or the public welfare shall be promoted thereby, the said Board of Health may cause to be slaughtered, and has authority to kill, or order to be killed, any animal or animals which by contact or cohabitation with diseased animals, or by exposure to infection or contagion therefrom, the said State Board of Health may consider and determine may be liable to contract or communicate the disease sought to be suppressed, and to prevent all danger therefrom.

SEC. 5. Any person or persons refusing to obey the orders, rules, or regulations of the said Board of Health adopted in pursuance to the provisions of this Act and the authority by this Act given to the said State Board of Health, or transgressing the rules, orders, and regulations of the said Board of Health adopted for the removal of the sources of danger from tuberculosis in milch cows or other cattle, or any infectious or contagious disease in domestic animals in any part of the State, shall be guilty of a misdemeanor, and shall also be liable to pay a fine of one hundred dollars, which fine the State Board of Health is hereby authorized to sue for and collect in its name in any court in this State.

SEC. 6. All expenses incurred by the State Board of Health in carrying out the provisions of this Act and in performing the duties hereby devolved upon it shall be audited by the Comptroller, as other expense of the said State Board of Health, and the sum of five thousand dollars, or so much thereof as may be necessary, is herewith appropriated out of any money in the treasury not otherwise appropriated for carrying out the provisions of this Act.

SEC. 7. The actual value, at the time they are killed, of any animals slaughtered, under the provisions of this law, to be ascertained and deter-

mined as hereinafter provided, may be paid to the owners of such cattle under and pursuant to any resolution of the said State Board of Health providing for such payment, and the Board of Claims shall have exclusive jurisdiction to hear, audit, and determine all claims which shall arise under the provisions of this Act, and to allow thereon such sums as should be paid by the State; provided, however, that no compensation shall be made under the provisions of this Act or otherwise to any person who shall wilfully have concealed the existence of disease among his animals, or upon his premises, or who shall in any way, directly or indirectly, by act or by wilful neglect, have contributed to the spread of disease sought to be suppressed or prevented; and provided further, that such claims shall not have accrued more than two years prior to the filing of the said claims.

SEC. 8. This Act shall take effect immediately.

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